

1st WINNER BEST TECHNICAL TITLE SUN MICROSYSTEMS ITJ AWARDS 2005

MAXIMUM POWER COMPUTING atomic

Issue 66 | July 2006

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PHYSICS REVOLUTION!

Is AGEIA the next NVIDIA?

12 HDTV TUNERS FOR YOUR PC

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Nintendo Wii

Generation ahead or a step behind?

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platform benchmarked

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Rise of PhysX

The world's first PPU is finally here, the sparkly new PhysX, and we've been playing with it extensively. Three of them in fact, which is nice.



But while the idea of a dedicated physics processor is awesome, the reality is something a little different.

Is it everything we expected? Yes and no. It needs a killer app, like any new technology, but it does deliver on its initial promises – the integration of complex physics in games. Dodgy ragdolls, starched clothes, and flat textured water will soon be out. Big beefy explosions are already in. The possibilities are well and truly open now, but this isn't the jewel of physics processing – while it can sex up the visuals, its true potential lies in entirely new forms of *gameplay* where physics are integral to how you play.

As the first of its kind, AGEIA's PhysX isn't quite there yet. But then neither was 3dfx and the original Voodoo. Regardless of AGEIA's success in the future, it has started the next arms race. And it already has competition, with NVIDIA and ATI lining up to integrate complex physics processing through their GPUs.

Over the next year, more and more titles will experiment with the emerging technology, and as we wait for the dust to settle and a standard to emerge, gaming will never be the same again. Honestly, we can't wait!

Also this month – us! *Atomic* recently won the 'Best Technical Title' at the Sun Microsystems ITJ Awards, beating out the local friendly tech mags you see on the stands. It's a coveted award, and it's thanks to you for the feedback we build on.

Enjoy the issue and look out next month for our super special on *quad SLI*. Never let it be said that two is enough!

Ashton Mills

amills@atomicmpc.com.au

Wii-mania!

Wii or we, went to E3. Your special report on all things gaming!



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HDTV madness!

In the market for some TV on your PC? We review a bunch of the best tuners.



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Condemned!

Most violent game ever?



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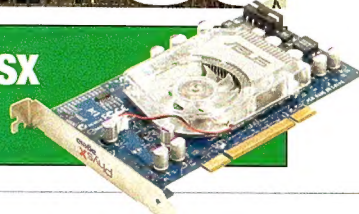
Battlefield 2142

A year on and DICE is at it again. Read our inside look on the next massive 64-player FPS!



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SUBSCRIBE TO WIN AN AGEIA PHYSX CARD! See page 58 for details.



COVER STORY ▼

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AUSTRALIAN FIRST!

The physics of PhysX

Gaming revolution or temporary solution? We let you know if it's worth 500 of your hard-earned bucks.

this month

LOGIN

Information, just the way you need it. Delectably digestible.

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HARDCORE

Atomic does hardware like nobody else. Hot damn, that's sexy.

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GAMEPLAY

Games are good. You know it, and we know it. Enjoy them here!

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Uber Linux Part 2

Make that all-in-one master Linux system a reality

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

Last login: Sun May 7 22:30:30 2006 from reptile

root@ubuntu:~#

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Lian-Li returns

The best in the case biz shows the rest how it's done.

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HDCP is the end of all things

How many times have we heard of foolproof hardware copy protection technologies? Read about one that may actually come to pass.



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UPDATE YOU CAN'T SERIOUSLY, ME

UPDATE



Sun Microsystems ITJourno Awards 2005

Atomic wins Best Technical Title. Winnar!

Sydney's Star City casino on April 28th was home to a great many things. One was undoubtedly gambling – as is wont to occur in the confines of a casino. Another, greater and more amazing event however was taking place, one that would bear witness to something that would make Atomicans worldwide smile like, well, people who like to smile.

Yes, that event was the Sun Microsystems ITJourno Awards for 2005, and the something it was witness to was *Atomic*, the magazine we all love, winning *Best Technical Title*.

We already knew that, obviously. Except now, we have proof. A great big lovely bronze statue of a lizard, which sits gracefully in the office, all frilly and proud. It sits on a beautiful

wood pedestal, on which rests a plaque. This plaque, which we polish every day with the side of Craig's head, reads 'Atomic, Best Gosh Darn Technical Title Ever' (title subject to slight exaggeration, but not really).

We've called our metallic reptile Nestor, because he's all nestled between us, and from time to time we hold competitions to see who can lick him the most. Craig almost always wins, being the bizarre creation of nature he is.

Best Technical Title wasn't the only thing we managed to bag. Logan came away with Highly Commended for Best Gaming Journalist, as well as being a finalist in Best Technical Journalist, and Ben was a finalist for Best Gaming Journalist.

Next year we'll be aiming for Best Technical Magazine once again, along with as many other awards as we're legally entitled. Until then, thanks to Media Connect, Sun Microsystems, Compuware, Samsung and Watterson Marketing for throwing such a grand gig!

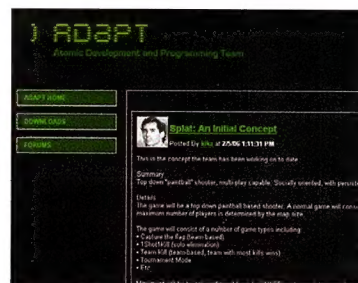
Atomic coders and game developers unite!

Atomic's crack team of coders is making a game. Give them a hand!

Fancy yourself a bit of a coder? An elite programmer of skills so great Tim McSweeney trembles at your feet and John Carmack wants to have your children? Then you better head on over to the *Atomic* Development and Programming Team (ADaPT) microsite at www.atomicmpc.com.au/adapt.asp. There, our team is working hard to develop a game using Microsoft Visual Studio Express. Things are starting to heat up, so start submitting your ideas and suggestions now. The

ADaPT site has its own blog where our coders post updates, and a forum where everyone can discuss their ideas. Make sure to check the downloads section for game builds and other tidbits.

Our team has until December to get their game done. If they can come up with a complete product by that time, they'll receive thousands of dollars worth of prizes from Microsoft, including MSDN subscriptions and other lovely stuff. Think you can help? Then get online and contribute!



First person shooters

Shooting! In the first person! Who would have thought it'd be so great? We delve into the history of this fantastic genre and deliver an abbreviated retelling of its progression.

1980s

Battlezone You drove around in a little tank that blew up other tanks. It wasn't top-down or isometric – you were inside that little tank. Kids everywhere made love to their Ataris. Arguably one of the first 'first person shooters', *Battlezone* even had primitive 3D graphics.

Duke Nukem 3D First person shooters began to heat up half-way through the 90s. 3D Realms released the popular *Duke Nukem 3D*, transforming the previously 2D platformer hero into a smart-arse pseudo-3D personality. *Descent* became the first true 3D game, followed by *Quake*, *Dark Forces* and *Goldeneye*: 007.



1993

Doom Software's *Doom* cemented the first person shooter as a genre, carving out the niche *Ultima Underworld* and *Wolfenstein 3D* had dug before it. *Doom* featured a range of weapons and enemies, and a decent attempt at rendering lighting.

1996



Did you win an Alienware gaming notebook? Read on and find out!

A 2GHz Intel chip, 512MB of DDR2 RAM and a 256MB GeForce Go 6800. Strap on a 17" widescreen LCD screen with a 1920 x 1200 resolution, a 80GB hard drive and a 8x DVD combo drive and what do you have?

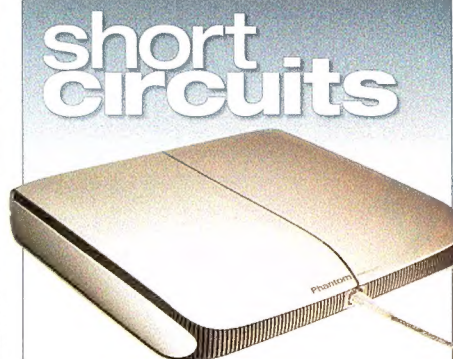
The Area-51 M5700 gaming notebook we gave away as a new subscriber prize in issue 63 of *Atomic*, thanks to Alienware. This tasty example of portable power computing weighed in at \$3315.

We're excited to say it was Steve Mason, of Hobart Tasmania that came out on top in our random name draw of new subscribers. Congratulations Steve on your win, we have no

doubt you'll get a lot of action out of your new toy!

If you like the idea of winning things, and you love reading *Atomic*, then it just makes sense to subscribe when you can. We're always giving away something great to our new subscribers, so be sure to check out our subscriptions section on page 58 for more information about what we're giving away.

Of course, if you're already subscribed, you can win too. From copies of *Elder Scrolls 4: Oblivion*, to cases of Buzz Monkey the energy drink. Winning stuff and *Atomic* – a better mix than your favourite radio station.



The US SEC (Securities and Exchange Commission) investigation of former Infinium CEO Tim Roberts has finally delivered, with Roberts being found guilty of raising the stock price of Infinium shares using investor funds and selling his own stock at a profit. Roberts made about half a million US total from the sales, and SEC won't stop hounding him until he's paid it all back.

May 16 saw Google officially open the doors to its lovely new offices here in Sydney, where it'll whisk away Australia's finest tech talent to conduct tasks unknown for the good of the search engine giant – and hopefully, for the good of us.

Great news! Your tape of the episode where Johnny takes his leap of faith in *The O.C.* is no longer illegal! Under new Australian federal copyright laws you can do as much taping of *The O.C.* and transferring of MP3s to your iPod as you want. Okay, so not much has *really* changed, it's just legal now.

Symantec, makers of all that fine Norton software, has filed a lawsuit against Microsoft for using intellectual property it doesn't own. Symantec is seeking an injunction that, if approved, could see Vista delayed for some time. Microsoft has said that it does indeed own the IP it's using, which is to be expected otherwise it'd be guilty, right?

Soccer or football?

All the news you need on the World Cup, thanks to **Dell** and **FourFourTwo** at www.theplayingfield.com.au!

We know there's more than a few Atomicans who have caught World Cup fever after Australia defeated Uruguay to qualify. With the main competition almost on top of us, it's time to find the right site to get all your info – and there's no better place than *FourFourTwo* – a soccer magazine made right here, next to *Atomic*.

FFT will be providing up-to-date coverage and news online at www.theplayingfield.com.au, with the help of Dell. On this site, along with commentary and updates, will be a nifty penalty shoot-out game for the especially soccer crazy. Be sure to check the site out.



Deus Ex When plot-driven FPS needed something more, *Deus Ex*, with its cyberpunk feel and intriguing story, came along and threw in role-playing elements. Again, this would be a feature incorporated into many titles to come. 2000 to 2005 saw *Serious Sam*, *Far Cry* and *Halo* join the mix, just to name a few.



FEAR Although *Doom 3* was pretty with all its normal mapping and volumetric lighting, it was *FEAR* that used these effects to enhance the gameplay experience rather than replace it. FPS games are no longer about shooting whatever is in sight – they draw you in and involve you better than any other genre.

1998

2000

2005

Half-Life When simply shooting things started losing its appeal, Valve took the Quake 2 engine and made *Half-Life*. Considered by many to be a plot-driven masterpiece, *Half-Life* made FPS fun again. This quickly became the trend for future titles. Also released between 1998 and 2000 were *Thief*, *StarSiege*, *Tribes* and *Unreal*.



Well, wasn't that exciting? Okay, semi-exciting. Come and check out *Then & Now* next month for a detailed recollection of chimp to man. Or man to chimp. One of the two.

E3 2006

THE NEXT GENERATION

Logan Booker ventures forth into the murky depths of Los Angeles, USA for three intense days of games, booth babes, skyfortresses and Wii.

If feet could talk, ours would say 'Ow'. That's what happens after three days of non-stop walking, talking and ogling at the Electronic Entertainment Expo – gaming's biggest annual event – otherwise known as E3.

This year's E3 – in a feat few can accomplish – easily consumed the 264,261 square metres in exhibition and meeting room space available at the Los Angeles Convention Centre (LACC), situated in a comfy haze of smog in Downtown. As far as Hollywood, hotels were booked out with developers, PR and the media and each day this crazy horde of industry peeps would travel by land, air and cute green submersible to get to the LACC.

The convention centre is made up predominately of three areas – the

South Hall, West Hall and Kentia Hall. The South and West Halls housed the larger and more prominent publishers and this year was populated by the likes of Ubisoft, Electronics Arts, NVIDIA, 2K/Take 2 and THQ. The West Hall – an agonising trek through a winding concourse from the South Hall that would kill small animals with poor constitutions – was packed with smaller booths for local media and various developers who wanted a separate presence from their publishers (Bethesda for example). Taking up most of the space in the West Hall, and holed up smack bang in the middle, were Sony with mainly PS2 and PSP games on show in a giant square of a booth and Nintendo, which managed to construct a bizarre swirling skyfortress to show of its wares. Lined up around Nintendo's stand, in increasingly larger

Aside from the games and the consoles, E3 contained a copious amounts of walking. Lots and lots of walking.

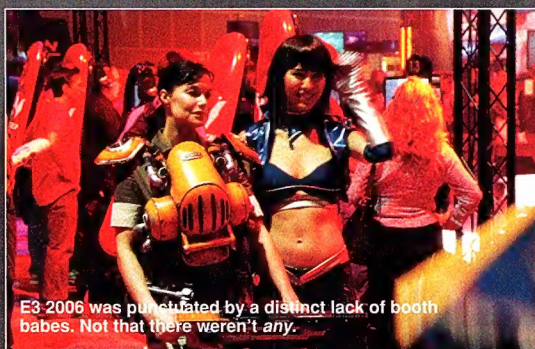


Kurt Wenner's amazing tribute to Epic's Gears of War

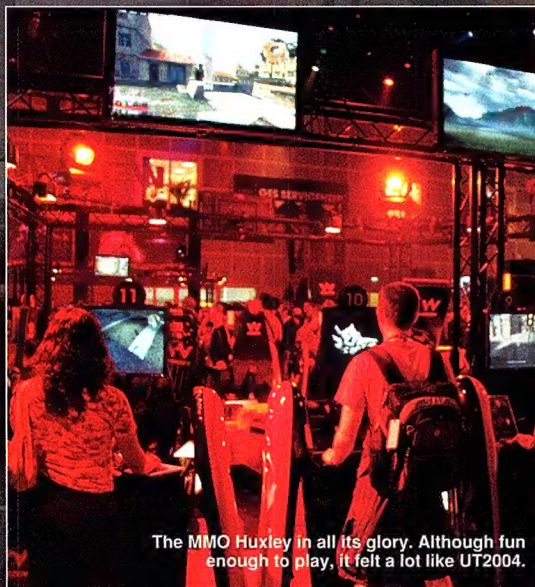
While Nintendo has zero presence here in Australia, it had by far the most impressive stand at E3 in the US.



E3 2006 was punctuated by a distinct lack of booth babes. Not that there weren't any.



The MMO Huxley in all its glory. Although fun enough to play, it felt a lot like UT2004.



Don't be fooled – most of the demo units here are running Playstation 2s.



concentric circles, were legions of fans waiting to get their hands on the Wii, the company's recently renamed next-gen console. Such was the allure that a five-hour wait served as penance to caress the device for a few moments and indulge in its almost sinful graces. And caress and indulge they did, in the thousands.

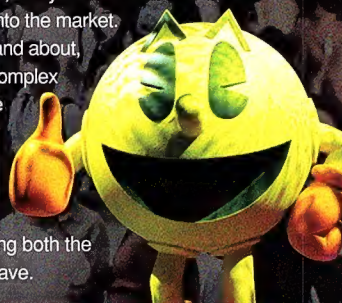
Finally, Kentia Hall was home to some of the smaller outfits or those that had little use for a massive showy booth. Here one could find Ascaron with Sacred 2 and Darkstar One; Emergent, owners of the Gamebryo technology used in Oblivion; the Witcher, an RPG based on the Neverwinter Nights engine; Australia's own MMO middleware business BigWorld and various hardware companies like Western Digital and VIA.

If it was tricky finding specific booths and stalls, it was harder still to squeeze through the 150,000 or so people who attended the event over its three-day run. Unless you were some sort of cybernetic ninja with wings or supernatural flying powers, bumping into people was simply an unavoidable occurrence.

Outside the South Hall and down the main flight of stairs loitered clusters of the lost, stunned and amazed, and in the centre of this space a giant

anamorphic image of monsters breaking up through the floor was painted by artist Kurt Wenner over the event's duration to promote Epic's Gears of War. Just up from this area was a Starbucks, the tiny stall regularly enjoying a queue almost as large as the one for the Wii.

What made E3 2006 particularly special was that it rested on the chasm of change as we move from one generation to the next. While the PC keeps on chugging away, the console makers – Microsoft, Sony and Nintendo – have gone into overdrive to get their new hardware into the market. While Microsoft already has the Xbox 360 out and about, we're still anxiously waiting for the blisteringly complex contraption known as the Playstation 3, and the deceptively simple but quirky Wii to make their way onto shelves. E3 this year was like having a chat to the spirit of gaming future and getting a tiny taste of things to come. To help you get your taste, we've gone to trouble of covering both the consoles and the games with the detail you crave.



THE BATTLE OF THE CONSOLES

XBOX360

Of all the next-gen consoles, Microsoft's Xbox 360 was the only one present in all its glory, with no shortage of titles for the platform (or the platform itself). By sticking with a mix of current and next-gen hardware, Microsoft has managed to release its console first, beating both Sony and Nintendo by a year. Whether this will hurt the console in the future when the PS3 comes out fists flying with Blu-ray and Cell only time will tell. For now, when its competitors do hit, the Xbox 360 will not only have a good price point, but also a large, established customer base and a fat catalogue of games.



PLAYSTATION 3

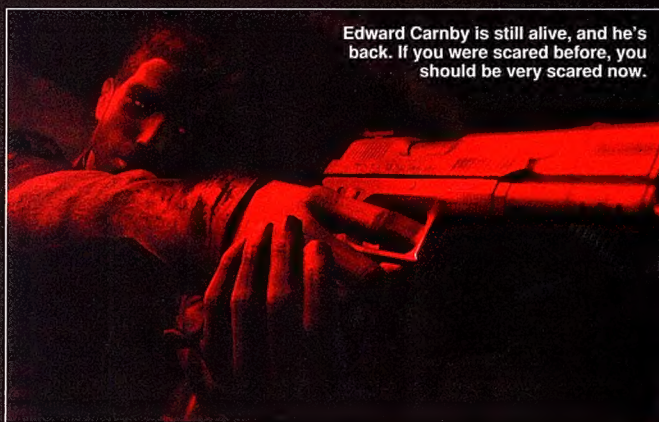
While the console's shell was out and about (now with ventilation holes), word was that the only thing running the games were dev kits and PCs. This didn't stop the games from being impressive, in particular titles like Assassin's Creed. Unfortunately, Sony's inability to supply dev kits to publishers and developers hurt the company's showing at E3. What we saw was mainly PS2 and PSP titles which couldn't really compare with the flood of next-gen games being paraded on Microsoft's hardware. The US\$500-\$700 price point for the various models also didn't help. There's doubt Sony will be able to hit its global November 2006 launch.



Wii

Drawing most of the attention was Nintendo's tiny Wii, which looked more like a slanted external DVD writer than a console. Enthusiastic fans lined up for more than five hours just to have a short play of the big N's next system. The somewhat unimpressive name and extensive use of blue LEDs and white plastic aside, the Wii put up a great show with its revolutionary controller and enjoyable range of game, including Sonic: Wildfire and Metroid Prime 3. Although the hardware is a few steps behind the Xbox 360 and the PS3, the graphics were good enough and will serve the console throughout its lifetime. Just don't expect the real jaw-dropping games to debut first, or at all, on the console.





Edward Carnby is still alive, and he's back. If you were scared before, you should be very scared now.



Everything is so pretty in the Assassin's Creed. It's our pick for the best game of E3.

Alone in the Dark Publisher Atari Primary platform Xbox 360

The complete absence of competing survival horror titles from Capcom or Konami made *Alone in the Dark* stand out among the many hundreds of titles at E3.

Set in modern times, players will have to guide Edward Carnby (yes, the same young Carnby from 1929) through the new local of New York's Central Park to save the world from an evil supernatural force. You'll also have to solve the mystery behind Carnby's strange reappearance in current times.

Developer Eden Games has decided to take the franchise – which has been eclipsed in recent times by other survival horror titles – in a new direction, much like Capcom did with *Resident Evil 4*. Among the changes include an open, sprawling setting in New York's Central Park; an episodic format – producer Nour Polloni used *Lost* as an example – and a focus on immersion and action rather than puzzles and 'key finding'. Eden has developed its own engine, including physics and a heavy focus on post production 'cinematic' effects.

Verdict A bit rough around the edges, but the technology looks great and the immersion is there. It just needs to beat *Resident Evil* and Capcom to the punch. What does next-gen mean 'For us, it's really innovative gameplay,' says Polloni. 'Of course, next-gen [also] allows us to have incredible rendering.'

Army of Two Publisher EA Primary platform Xbox 360

An interesting title from EA's new studio in Montreal (if by now, you mean 18 months old), *Army of Two* is built from the ground up to be a co-op title for two players. Imagine *Splinter Cell: Chaos Theory*'s two-player mode, where you have special moves that can only be performed with the help of a mate, and you're halfway there. *Army of Two* expands on this concept by making almost every situation approachable using your dynamic duo. Content-wise, you play a pair of mercenaries that find themselves in the employ of governments to solve dirty problems in Afghan and other hotspots. As you'd expect, this gives you access to many modern day arms including rifles, shotguns and pistols. You can even upgrade and 'bling-out' these guns using your ill-gotten gains.

If you decide to just play by yourself, your team mate has a sophisticated AI and will make recommendations, argue and congratulate you. One part of the demo had the two mercs setting up for a 'co-op sniper' shot to take down two enemies simultaneously. The

AI remembered that the demonstrator had bungled a previous sniper attempt and argued with him about who should make the call. We also have to nominate *Army of Two* for the game with best feature of E3 – if you get fatally shot, your mate can perform CPR while you attempt to run away from the light. Seriously.

Verdict We're not sure if having to constantly argue with an AI team mate is next-gen gameplay, but a co-op game in an industry of MMOs and 64-player frag fests is still tops. Some of the novelty features might wear thin.

What does next-gen mean Fancy AI and voice communication from what we could see, and cutting-edge graphics.

Assassin's Creed Publisher Ubisoft Primary platform PS3

Assassin's Creed was really a step beyond much of what was playing at E3. Maybe it's the power of the PS3, or simply having a hot producer working on the game, but *Creed* had that extra something, that attention to detail, that made it our pick for best game.

It's a new IP from the developers behind *Prince of Persia: Sands of Time*, and the influence was present in the demo we saw. You play Altair, a master assassin working his ways in the Middle Ages with a nasty sharp knife, along with an array of tricks, up his sleeve. While other games focused on next-gen effects like bloom to make their graphics look great, the developers for *Assassin's Creed* have done the groundwork with the textures and animations to bring the characters and world to life.

Anything that juts out more than two inches in-game can be grabbed and climbed, according to Jade Raymond, the aforementioned hot producer. They can just throw the map, which we suspect contains displacement maps to point out areas to be 'juttied', into their toolset and out pops a level full of interactivity.

But interactivity in *Assassin's Creed* comes in many forms, and a lot of work has gone into making Altair subject to his environment. If Altair decides to run into a crowd of people, he won't run through them or bump unrealistically off them like a pinball off a paddle – he'll trip, stumble and eventually fall over. That's why he can push them out of the way, from a gentle brush, to a giant shove that'll leave them sprawled on the ground. Helping certain factions will see you getting aid from them later. In fact, the demo we saw had Altair using the cover of clerics to move close enough to his mark. As they walked towards the target, Altair was able to move in and duplicate their pose, bowing his head and clapping his palms in front of his body. As soon as the time was right, he sprang into action, the kill glorified with cinematic effects. Unfortunately, it didn't take long for Altair to be mobbed by guards and dispensed with. This, however, revealed a futuristic interface, lending the game another element that we can't wait to see more of.

Verdict The attention to detail, the mysterious sci-fi elements and the gorgeous graphics make *Assassin's Creed* our pick for best game of E3.

What does next-gen mean Fully interactive environment, fluid animation and high resolution textures.

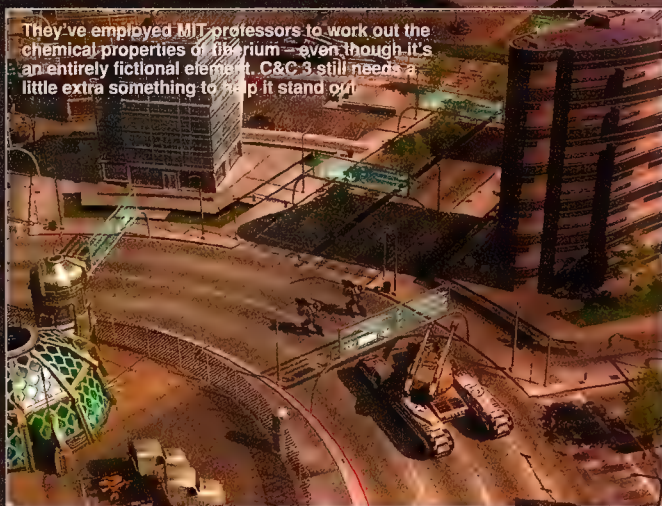
Bioshock Publisher Take 2 Primary platform PC

We covered *Bioshock* in great detail last month in our exclusive preview, however, we couldn't cover E3 without mentioning this great title once again.

Bioshock, as you've undoubtedly heard (and correctly) many times over, will be the



A game with an argumentative AI for a mate that you'd want to shoot in the head.



They've employed MIT professors to work out the chemical properties of tiberium—even though it's an entirely fictional element. C&C 3 still needs a little extra something to help it stand out.



Caesar 4 has everything you'd expect from a city builder of its pedigree.

spiritual successor to System Shock, a first-person shooter that introduced role-playing and horror elements to the genre. Developed by Irrational Games, a company made up of many of the people from System Shock's Looking Glass Studios, Bioshock has the talent and the potential to be everything SS was and more. Set in the 1950s in the city of Rapture, an underwater metropolis populated with the world's elite with the ability to alter their genetics, Bioshock shows us a frightening side of humanity. Civil war and grotesque mutations ravage Rapture, leaving it a dead shell... and the perfect setting.

Like System Shock, you'll have to manage your resources, upgrade your abilities and manipulate your surroundings to escape from Rapture alive. Power comes at a price though and, like the long-dead citizens of Rapture, you'll have to ask yourself if altering your genetics to help you survive is too high a price to pay.

Bioshock, so far, has all the hallmarks of System Shock, but with its own unique touches. We can't wait to play it, and it was definitely one of the best titles at this year's E3. If you'd like to read more about this title, check out our eight-page preview in issue 65.

Verdict: Creepy, fun and oh so mysterious, System Shock fans should set aside time now to play this great title. We can barely wait.

What does next-gen mean: Emergent gameplay, according to Irrational's Joe McDonough. The game contains the environment and tools, and it's up to the player to decide how best to use them.

Command & Conquer: Tiberian Wars

Publisher EA Primary platform PC

One of the great strategy franchises returns, even though Westwood no longer exists and the likes of Brett Sperry and Mark Skaggs have left for pastures unknown. Set in

the future where tiberium has left most of the world an infested wasteland, it's up to the player, depending on whether they choose the Global Defense Initiative (GDI) or Brotherhood of Nod (NOD), to lead their side to victory—be that through saving what's left of the world, or to gather tiberium for its technological advantages.

The game itself is based on an upgraded version of the Sage engine, the same one used in C&C Generals and more recently, Battle for Middle Earth. As for the gameplay, developer EA Pacific isn't changing a whole lot—more refining what's already a great RTS formula. Systems such as pathfinding, however, have undergone a rewrite, to help facilitate fast and fluid gameplay.

It's interesting to note that the developers have gone to a great deal of work to flesh out the back story, going so far as to employ a pair of Massachusetts Institute of Technology (MIT) professors to work out the chemical properties of tiberium—even though it's an entirely fictional element. If designers, coders or artists have a question on tiberium, or pretty much anything else in the C&C universe, they now have a comprehensive set of guide books to refer to. Hopefully, this groundwork will result in an engaging RTS, not just for the gameplay, but the history, story and characters as well.

Verdict: It needs a little extra something to help it stand out against the likes of Supreme Commander, but the strength of the franchise should see it through. **What does next-gen mean:** Pretty graphics for the most part. However, EA Pacific is optimising the Sage engine to improve the core gameplay.

Caesar 4

Publisher Vivendi Primary platform PC

This little gem of a city builder was hidden away unjustly behind the epic booth containing Blizzard's World of Warcraft expansion The Burning Crusade. The Caesar series was



ry and fun. System Shock fans should set aside time now to play Bioshock. And don't forget a spare pair of underpants.



What makes space rocks so interesting in *Crysis*? The fact they spawn giant laser-wielding robots, for one.

to the city builder genre what *Doom* was to first person shooters. Originally created by Sierra-owned developer Impressions, *Caesar* put the player in control of creating a economically strong Roman township, complete with aqueducts, prefectures and industry. Although there was a military component, it played a minor role in gameplay. Tilted Mill, which contains a number of folk from the now-dissolved Impressions, has taken the greatness of *Caesar* and made it better.

Sporting a luscious 3D engine, a first for the series, *Caesar 4* has everything you'd expect from a city builder of its pedigree – fine control of taxes and government spending, intelligent AI to promote wise construction of suppliers and primary resources and verbose feedback to help shape your city into a diatribe-making powerhouse.

Verdict A competent instalment to the *Caesar* series to bring city building back into the fold. It's a bit rough, and the engine needs a lot of performance optimisation. What does next-gen mean **Complex AI** and algorithms to handle the interactions between citizens, government and industry, and a 3D engine to handle it.

Crysis

Publisher EA Primary platform PC

Holding gazes longer than an army of topless Jessica Alba clones, *Crysis* was more than gorgeous enough for two next-gen titles. Although we didn't see any of the impressive foliage bending that attendees of Microsoft's Professional Developers Conference 2005 were witness to, everything else was up to scratch. Performance was a bit shaky on the SLI-equipped beasts EA had the game being demoed on and it definitely needs some



Haze is the sort of game that pretends to be one thing but is really another. Or so they want you to think.

optimisation work, but it was stunning nonetheless.

If you didn't already know, *Crysis* is about a nasty love triangle between North Korea, a meteor and the US Delta Force, with you playing the role of the US. Korea has already staked its claim on the fallen bit of space rock, but as expected, the US has to intrude. After infiltrating the strike zone and shooting a few innocent soldiers, you'll come across a giant ice dome that has expanded from the meteor. That's when things start to heat up (or cool down) as entering the dome reveals a frozen wasteland where pretty much everything can be shattered with a single bullet.

Throw in some giant walking robots animated right down to their articulate spider-like metallic legs and the best graphics the PC has to offer and *Crysis* is the first-person shooter to watch.

Verdict It's going to be one hell of a performance hog, but *Crysis*, with its big open environments and varied environments will easily eclipse the success of *Far Cry*. What does next-gen mean **Graphics, graphics and more graphics.** Hopefully we'll have bending foliage to really make the game stand out.

Haze

Publisher Ubisoft Primary platform Xbox 360

Looking for the next *FEAR*? You'll find *Haze* is your man, or game, or man-game. Developed by Free Radical, the same guys behind *Timesplitters*, *Haze* is the sort of title you sit down to play expecting one thing but experiencing something completely different.

Set in a world where the United Nations employs corporations as its peacekeeping force, *Haze* has the player behind the eyes of John Carpenter, a soldier who works for one of those corporations – in this case pharmaceutical company Mantel Corp.

Our friend Carpenter isn't just your average soldier. He's drugged up on Nectar, a stimulant manufactured by Mantel. Nectar increases reflexes and strength, turning Mantel's troops into the best 'peacekeeping' force money can buy. Additionally, Mantel makes some damn fine weapons.

Free Radical approached the game with an autonomous AI in mind. Basically, an area is set up with opponents with AI routines that can simulate, say, an insurgent force holding a position. All Free Radical needs to do is drop the player into the area, and the AI will move and react like a combined force, using their environment and responding to advances by the player.

Remember how we said *Haze* is the sort of game that pretends to be one thing but is really another? Right at the end of the demo we saw, one of the Mantel peacekeepers shoots a rebel who has surrendered. Suddenly, a message comes on screen declaring an 'Administrator error' and things go the way of the bizarre, the once-clean soldiers covered in blood and their faces contorted in rage. Things quickly correct themselves, leaving us understandably mystified. It was great.

Verdict Like all next-gen titles, *Haze* has great graphics. There is, however, an intriguing premise just waiting to reveal itself.

What does next-gen mean **Autonomous AI** and, yes, graphics.



No other RTS came close to the degree of sophistication in Supreme Commander. The robot with the big laser is known as the Monkeylord.

Supreme Commander

Chris Taylor has seen the future of real-time strategy and picked it with the successor to his original Total Annihilation. The next thing in RTS isn't graphics or particle effects or even AI – it's interfaces.

With three different sides to command – the UEF, the Cyborgs and the Aeon – and a flexible engine, Supreme Commander was already looking like a stunner. But it was the dual-screen support and configurable user interface that hooked us.

Taylor and his outfit, Gas Powered Games, has realised a new level in strategy, both in scope and control. The demo we saw had 'combined' waypoints being set for different forces, allowing for co-ordinated attacks by multiple forces simultaneously. And these weren't just regular waypoints – they had ETAs on them! Throw in simulated weapons (each Big Bertha round calculated to perfection), battleships, and robots with multiple weapons and an intelligent AI base commander that will automatically replace destroyed buildings and you can't help but yelp in joy.

Dual screen support in strategy games should be a given in this day and age – just take one look at Supreme Commander and you'll realise how indispensable having one area focused on the action and another zoomed out (all seamless, with 3D units being replaced by icons) to monitor the entire battlefield. Immediately, you are the commander with a view of the big picture, not cramped in a small area trying to micromanage a force so large it hurts your brain.

Finally – the configurable UI. Drag it wherever you want, get it out of the way or just leave it in its default position. No longer will part of the RTS experience be coming to terms with the interface – you and it will be one. Well, that's our hope anyway. From what we saw, Supreme Commander will be the RTS of 2007.

Verdict: No other RTS came close to the degree of sophistication and love in Supreme Commander. The graphics could do with a bit of a polish. What does next gen mean? Dual-screen support and a configurable user interface.

Honourable mentions

Like we said, E3 is a gamer's dream, and trying to cover every game would be a mammoth task. So, here's a short shortlist of other games we think will be big once they hit.

STALKER: Shadows of Chernobyl

Publisher: THQ Platform: PC
STALKER made a valiant return this E3 2006, showing a slimmer, more focused project. Minor role-playing elements like eating and sleeping have been cut and vehicles are at risk of being removed, but the open-endedness and the disturbing but fascinating theme of the Chernobyl disaster are very evident. We're confident of an earlier 2007 release.

Enemy Territory: Quake Wars

Publisher: Activision Platform: PC
Quake Wars is a futuristic shooter that is very much in the same vein as Starsiege: Tribes. It will be a great multiplayer FPS for id fans – strogg or human, you'll have fun driving, flying and jetpacking around the detailed landscapes thanks to Carmack's Megatexture (which is really just a variation on bog standard virtual textures). A competent competitor to Battlefield 2142.

Fear: Extraction Point

Publisher: Vivendi Platform: PC
If you finished FEAR and you're hungry for more, then your pangs will be answered by this 10 or so hour expansion that picks up where the original left off. A helicopter crash and dark hallway later, you're right back into the action, fending off troops, robots and insanity. Oh, and Alma. This time, however, you'll have a nice fat minigun to help you out, along with a few other special inclusions we'll find out about soon.

Tabula Rasa

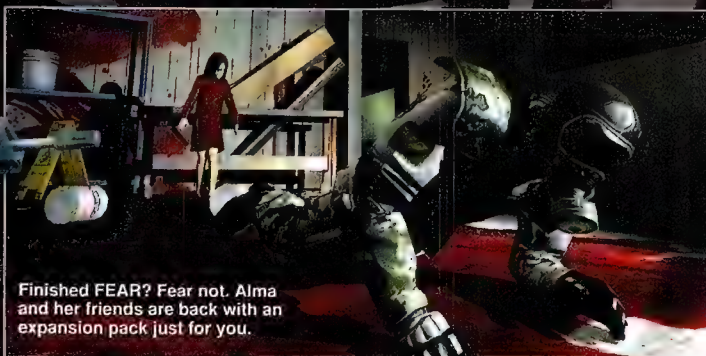
Publisher: NCSOFT Platform: PC
From the mind of Richard Garriott of Ultima fame comes this sci-fi/fantasy MMO that's undergone a bit of a transformation to be more sci-fi heavy in recent times. It's Planetside meets World of Warcraft really, with included picking up of ammo like a game of Quake 3, and if you've been waiting for a massively multiplayer title to satisfy your plasma rifle needs, then it doesn't get better than this.

The Darkness

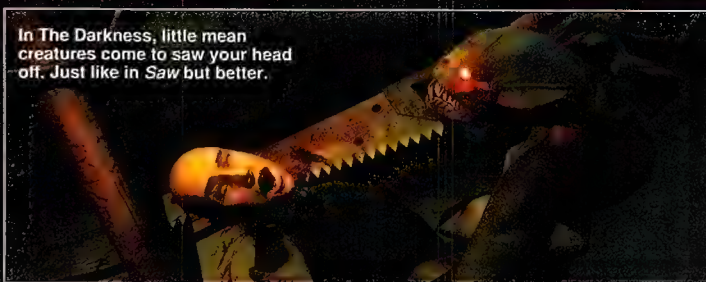
Publisher: Take 2 Platform: Xbox 360
In a closed-off room at Take 2's booth resided this interesting comic-to-game title that has you shooting out lights to grant you a myriad of death-dealing powers, from telekinesis to summoning little mean creatures to saw the heads off your enemies. The game looks very sweet, even though it felt like a UT2004 mod.



Shadows of Chernobyl shows a slimmer, more focused project. Let's hope it doesn't get too focused.



Finished FEAR? Fear not. Alma and her friends are back with an expansion pack just for you.



In The Darkness, little mean creatures come to saw your head off. Just like in Saw but better.

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protons (that can pass through the electrolyte) and negatively-charged electrons (that can't). When the hydrogen protons hit the oxygen, they turn into water. Seeing as the waste product is simply H₂O, the PEMFC is not only a good alternative because its fuels are so abundant, it's also eco-friendly.

There are two problems that have prevented PEMFC from entering into mainstream use sooner. The first is containing the hydrogen – hydrogen is an incredibly small, volatile element, making reliable transportation a tricky prospect. Secondly, the management of 'waste' water has posed a number of design and engineering problems. Overcoming these hurdles has simply involved time and effort.

The hydrogen problem was solved by using methanol to store the hydrogen. This, unfortunately, introduces another step in the process – getting the hydrogen from the methanol – but this hasn't proved significant (synthesising methanol is an entirely different story, however). As for the water management, a company called MTI Micro and its 'Mobion' technology conquered that. Mobion basically transfers water management from being an external process to an internal one, making use of micro-plumbing components to circulate the liquid within the cell.

While using methanol has solved one problem, it's created another. Currently, methanol is primarily synthesised from natural gas, and as we all know, natural gas isn't exactly a renewable resource or an abundant one. Options exist to make methanol from wood, sewage and algae but, unfortunately, not in yields large enough to satisfy demand. Again, this is a problem that can only be solved through time and effort.

Of course, there is one immediately obvious renewable gas source that can be converted into methanol – methane. We'll leave it up to you to figure out how to tap into that one.

Our oil economy is quickly sagging under its own accelerating demand, with world production of the slippery substance falling faster than a pair of blind monkeys in a biplane. Many technologies, from solar to nuclear to hydroelectricity have emerged to replace what is perhaps the easiest and most prevalent form of producing energy. Of course, anyone can tell you that finding an alternate power source is just a small part of the problem, with everything from lubricants to plastic made using oil.

Let's, however, focus on the issue that's forefront in the minds of most – replacing petrol. The most advertise solution has been, apart from battery power (which requires the burning of fossil fuels to charge), the use of fuel cells.

Fuel cells are kind of like a battery – they take chemicals and, through a process, create electricity. Except while a battery depletes and needs to be replaced or recharged, a fuel

cell keeps working as long as the chemicals it requires are fed into it.

The exact process is as follows: inside the fuel cell is an electrolyte sandwiched between an anode and a cathode – just like a battery. Two chemicals, or fuels, pass on each side of the electrolyte, the one on the cathode side drawing protons from the anode-side across the electrolyte. The leftover electrons then flow through the anode which is part of a circuit, where it can be used to power whatever it's connected to.

While there are a variety of fuel cell designs being researched and used, the one with the most promise is the Proton Exchange Membrane Fuel Cell, or PEMFC (and the one we used in our aforementioned example). The PEMFC design uses hydrogen and oxygen as its chemicals (or reactants), and platinum as the catalyst to separate the hydrogen into positively charged

FACTOMATIC

- According to Indian mythology, the 108 'pitha', or sacred places, were formed when a devastated Lord Shiva ascended to heaven with his immolated wife, Sati. 108 parts of her body fell from his grasp and landed on Earth.
- Our definition of the amount of time that passes during a 'second' is based on the number of cycles (about 9 million) it takes for an atom of caesium-133 to transition between two energy levels.
- Part of Buddhism is understanding dharma, the cornerstones of which are the Four Noble Truths and the Eightfold Path. The first three truths in order are: Suffering; Desire and the Cessation of Suffering. The fourth truth, which involves the Eightfold Path, shows how one can cease their suffering.
- What do you call a group of cats? A clowder.
- Unlike most, the minor prophet Ezekiel had a love of drama. The name Ezekiel means 'Whom God makes strong'. During his exile, where no government or law existed, Ezekiel passed on many messages of God including the need for people to reform for their sins and accept the will of God before He would walk among them.

BIOTECH BENOÎT B. MANDEL BROT

Explaining snowflakes with maths!

Although he didn't originally discover fractals – the infinitely complex, recursively-constructed shapes having been seen but not classified years before – he did coin the term and brought theory to chaos. Born in Poland on 20 November 1924, Mandelbrot was introduced to academia at a young age, by his mother, a doctor, and mathematically-inclined uncles.

Most of his learning years were spent in France (with a short stint at Caltech) until 1952 when he received his PhD in Mathematical Sciences. In 1958, he moved to the US with his wife, Ailiette Kagan.

Since then, Mandelbrot has spent time at a number of universities including Yale and Harvard, eventually finding himself in the employment of IBM until his retirement in 1987.

Source: www.wikipedia.org





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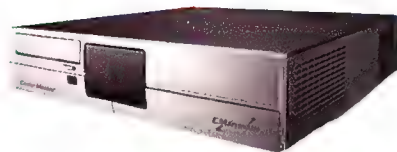
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Wiik as...

A name to make kids titter, marketing gurus nod and gamers wince. Tim Dean reckons it reeks of desperation.

I've been waiting quite a while to add a new entry to the list of ambiguously inappropriate company and product names. Let's list the current entries: Rectron (the proctological IT specialists?), Servex (the gynaecological IT specialists?), and who could forget Rivers of Com (no description necessary, or desired).

Now we have Wii.

Thanks Nintendo. I can hardly keep a straight face.

Naming a company or product is no easy task. There are many factors to consider in choosing an appropriate name: it has to be punchy; it needs to speak about the company or the product itself; and it should be memorable. And it can't be offensive in any language or to any culture.

You may remember the Mitsubishi Pajero, which in Spanish translated to something like the Mitsubishi Wanker. Or the similar problems suffered by the Buick LaCross, which in Quebec was read by teenagers as the Buick Wank. Maybe they were the cars for the self indulgent, but needless to say the companies responsible for the names were not pleased with their inadvertent gaffs.

Naming businesses and products is such a challenging proposition that there exist entire companies that do nothing but create product names. In fact, I've even heard that Intel has a department dedicated to naming.

They start by researching possible names, looking for interesting angles and deriving new words from old (such as the 'pent' in 'Pentium', which is derived from the Greek word for 'five').

The research then kicks up a notch as they scour every possible language and culture they can to determine whether it has a negative meaning or sounds like an inappropriate word.

This is why Intel usually has product names that don't have a direct translation in any language, such as Xeon, Itanium and Celeron (Core Duo is a notable exception).

Even with all this research, mistakes can still be made. Sometimes, the gaff can be a relatively obscure reference that can't be found in the

dictionaries in that language. VIA suffered some unfortunate negative publicity in 2000 when it released its KZ133 chipset. What VIA didn't realise is that Nazi concentration camps were called *konzentrationslager*, which was commonly abbreviated to KZ, followed by the number of the camp. It didn't take long for VIA to change the name to KT133, but the damage had already been done, not to mention the costs of rebranding, reprinting marketing material and rebadging products.

Then there's the legend of the Taiwanese company that was searching for a punchy name for its new PDA. It thought about appropriate words for its product, which was small, portable, fit in the palm of your hand and was great for doing your work on the move. So they called it the Hand Job.

So, for an international company like Nintendo, we can rest assured that it didn't just whisk Wii out of thin air and neglect to reflect on its possible uric homonym. No, Nintendo knew exactly what it was doing.

It was also deadly precise with its timing. Instead of announcing the new name at

E3, Nintendo set it loose among the games sites and blog community a bit over a week early. A nice way to let the name generate some buzz and hype before the expo opens.

Clever marketing? Maybe. At least in the short term. However, at the end of the day it also means Nintendo is going to have to live with what is ultimately a bloody stupid name.

No matter how much attention it garners today, it's going to leave a legacy that probably speaks more of Nintendo's desperation in the face of Microsoft and Sony rather than a legacy of innovation.

For that reason, I reckon it's wiik.

Tim rolls around on thumb-tacks just to prove he's hard.
tim@atomicmpc.com.au



91:34



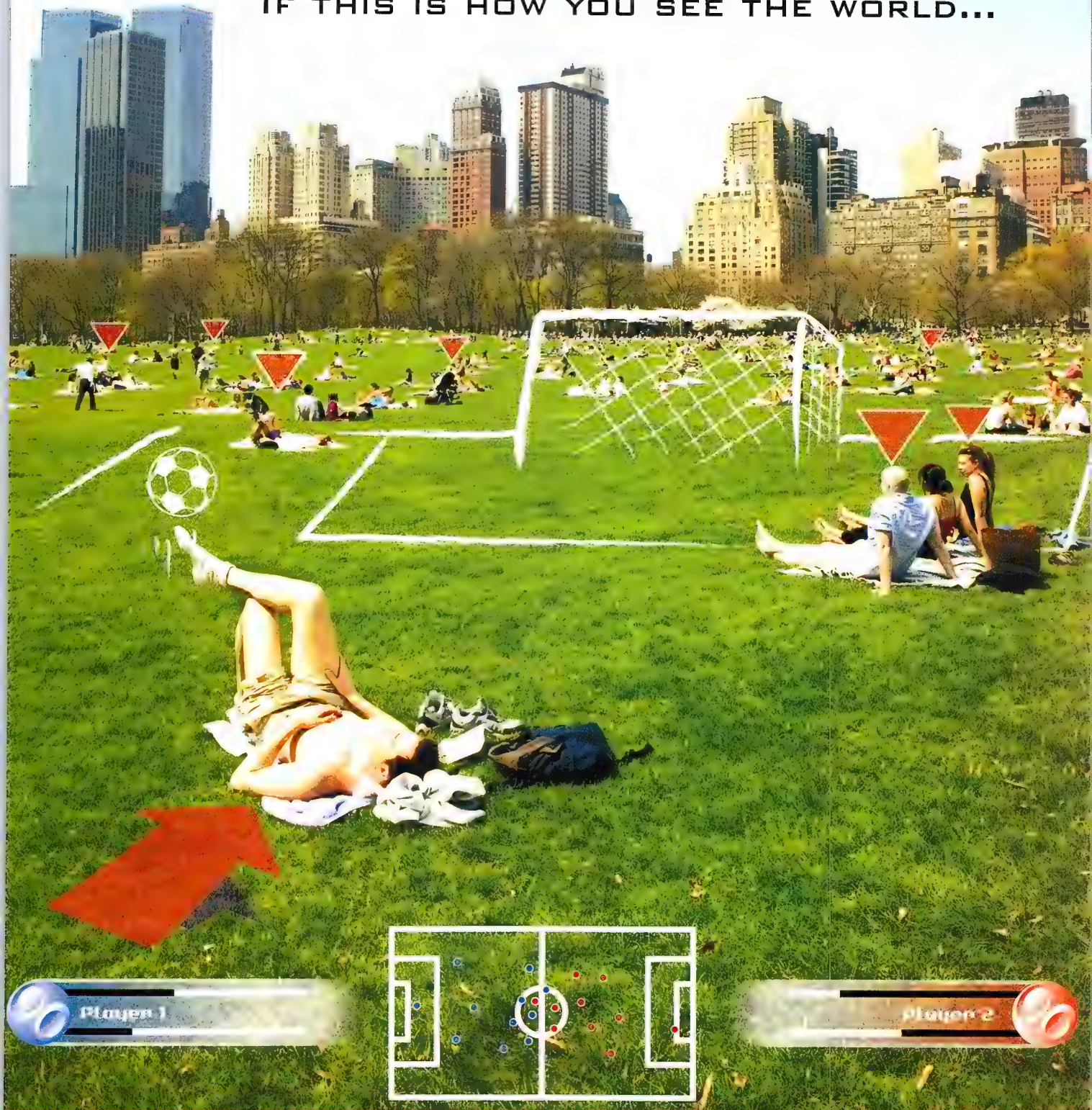
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1 - 2

AUS



IF THIS IS HOW YOU SEE THE WORLD...



Player 1

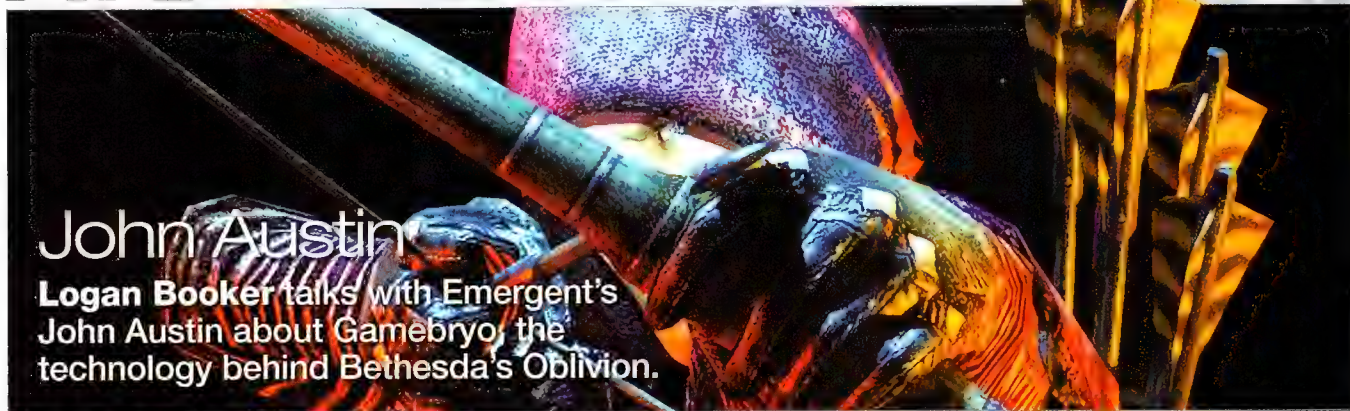
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*Let's game*

ATOMICCHAT



John Austin

Logan Booker talks with Emergent's John Austin about Gamebryo, the technology behind Bethesda's Oblivion.

John Austin has worked with the guy who invented ray tracing and helped Gamebryo become the most gorgeous-looking engine middleware in the business. We managed to corner him at E3 and talk to him about NDL, NetImmerse and Gamebryo, as well as Emergent's plans to create a complete client and server tech package for game developers.

atomic How long have you been with Emergent?

John Austin I've been at what was NDL – which had the NetImmerse engine – since 1998. I was hired as vice president of engineering and shortly thereafter they asked me to be CEO. I was CEO of NDL up until August of 2005, when we did the merger with Emergent Game Technologies.

atomic What did Emergent bring to NDL?

John Austin What we recognised was that there was an opportunity for a much broader set of tools and technologies for the middleware games market. There are companies out there selling physics, graphics – a lot of single point technology companies. It looked like the time was right to try and create a company that had a one-stop shop for all the tools and technologies that game developers need.

Emergent had been founded in 2000. In 2004 it raised a significant amount of money from some first tier venture capitalist firms and has been working on other technologies for game developers ... a server engine, which we will launch next year; some automation tools for building and testing games and a metrics product ... allows game developers to collect and analyse virtually any kind of data about their game whether it be in production, beta test or in online games.

ATOMICBIO

Name John Austin
Occupation COO, Emergent
Websites www.emergent.net

John, who served as CEO of NDL prior to the merger, is a veteran of the games middleware market, having been around since shortly after NDL announced the NetImmerse product in 1998. He has more than 20 years of experience in the computer graphics industry, encompassing management and engineering positions at Hewlett-Packard, Inc., Sun Microsystems, and the Computer Sciences Department at the University of North Carolina, Chapel Hill. John earned a M.S in computer science from the University of North Carolina, Chapel Hill. He holds a Bachelor of Science in electrical engineering awarded by Valparaiso University in Indiana.

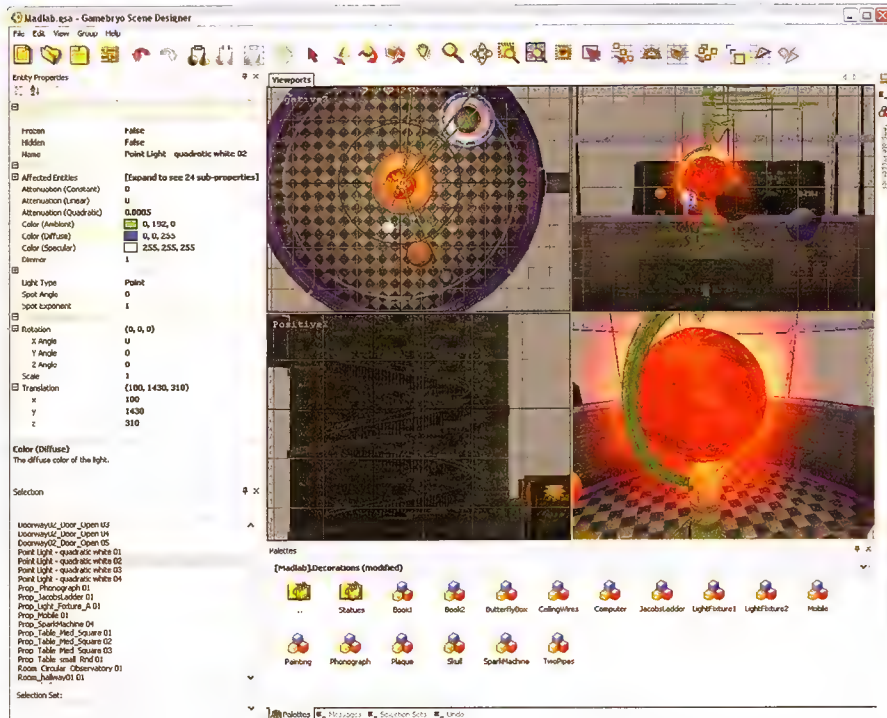
Source: www.emergent.net

atomic When NetImmerse was originally created, was it with just PCs in mind?

John Austin NetImmerse was originally a PC engine and then we made modifications for Playstation 2 and Xbox. The current version of Gamebryo is much more architected with modern parallel PCs in mind and the parallel kinds of processing you can do with the Xbox 360 and Playstation 3.

atomic What's your relationship with Bethesda? Obviously you supply the technology – do you support it from then on? When you release something new do they get access to it or do they have to pay more?

John Austin Our licensing model is typically to license our Gamebryo engine on a per-product basis. So they pay us a license fee up-front then they also pay an annual support fee. We think support is a very important part of the equation. We're doing really hard things; game developers are doing really hard things, so they really want to push our engine to the very limit. So as part of our support, they get two updates a year – we are continually evolving and adding features and capabilities to our engine so they can take advantage of that. We establish a dialog with them on how they can optimise the use of the engine, modify it and basically get exactly what they want out of it.



▲ Gamebryo comes with a comprehensive set of tools for developers.

atomic How do you stay ahead of the graphics curve? Do you have relationships with companies such as NVIDIA and ATI to find out what features you need to implement?

John Austin Certainly. There are really three things that drive where our products go. One is customer requests. Another area is just our own anticipation of where we think games are going to go. We have a lot of smart engineers at this company and they have a lot of good ideas. About a third of our software developers have been in game companies before, so they know games inside and out. Another set comes from a related industry – our graphics engineers might have been doing scientific visualisation or worked on a computer graphics program. Some of the folks working on the server engine have come from games companies, others from government research projects where they've done research on massive systems and things like that. It's a mix of people from professional software, games and research. We [also] have very close relationships with Sony, Microsoft, NVIDIA, ATI, Intel and AMD. So we understand where their products are going to be and we can anticipate what we're going to have to do to support their features.



▲ John Austin, chief operating officer of Emergent and former CEO of NDL.

data you want. Then we have a Web-based dashboard that allows you to display and analyse that data. These probes can measure anything from things as low-level as frames per second to higher-level things like player behaviour.

atomic Was NDL originally started to create a game engine, or as a game developer?

John Austin NDL was actually started in 1983 by a guy named Turner Whitted. Turner is the guy that invented ray tracing and was into computer graphics rendering. So the first products the company built were not for games but for high quality rendering. What was interesting was that it was a middleware business – we didn't make an end user product back then either. For example, AutoCAD from Autodesk. Up until three or four years ago, if you used AutoCAD to design a building or landscape and then went down into a menu and wanted to click and look at the rendered picture, that was NDL software doing that rendering. So we were in the middleware business before anyone knew what middleware was.

From 1983 until about 1996, the company just worked on rendering products. Then around that time, Turner started to see chips coming out from 3dfx and NVIDIA and Turner recognised the next interesting computer graphics stuff was going to be in games and the 3D chips coming out of PCs were going to generate a whole new market. That's when the company started working on a graphics engine for PC games. That became the NetImmerse product in 1997 and move to Playstation 2 and Xbox. We then enhanced it and changed the name to Gamebryo and added tools. Now we're going from what was a graphics engine to something that's much more of a complete game engine.

atomic So you're designing systems like physics as well?

John Austin What we're doing is either designing it ourselves or licensing technology from another company. In Gamebryo, we do have collision detection and particle systems and there's a little bit of physics in there. In fact, with the current release of Gamebryo, there is complete integration with AGEIA. If a customer wants to do full-blown AGEIA physics there's a completely integrated layer. Our pitch to game developers is that you should license an engine rather than build it yourself. We feel that same way [about middleware]. If someone is out there with physics that's really, really great we shouldn't build it ourselves, we should partner with the company that builds it. There's also company called Algorithmic [that specialises in procedural texturing] and what they can do is generate very beautiful textures with essentially no memory footprint – and that's really important for things like Xbox 360 live arcade where there's a size limit. If we partner with them and make it so Gamebryo can work with that, that's really great.

atomic Do you see PhysX and the physics processor as something that's going to take off?

John Austin I think what will really drive it is if there's a really compelling game. [The customer doesn't] care if it's generated by a physics chip, software algorithms or magic pixy dust. What was it that drove Playstation 2 sales? Grand Theft Auto. When the console manufacturers come out with their next-generation consoles, it drives their sales if there's a really compelling game that people want. They buy the game – they don't buy the console. What will drive how fast these chips get adopted is whether there are great games that take advantage of that technology.

atomic Going back to the server technology for Gamebryo you mentioned before – can you go into more detail?

John Austin For all of our products, one of the keys is flexibility and modularity. We're doing the same thing on the server engine side. So our server can be used for massively multiplayer online games as well as advanced 'casual' games – 6-player and 8-player. We think that's a really important trend in the market – it's not just going to be about MMOs. We have a team that's working on that, and it'll be delivered around the first [quarter] of next year. The product that we just announced at GDC and will be shipping is our metrics product.

atomic So the 'metrics' product is separate from Gamebryo?

John Austin Yes. The idea is there's a set of probes – one line of code – that you basically can drop into your game that are general purpose and allow you to collect any sort of

HDCP and you

Hollywood is here to protect you from yourself, reports **Jake Carroll**.

Do you rip your DVD movies? Chances are, if you are like many of us, when you purchase a movie you like to keep it in good condition. It's not uncommon to rip or descramble DVD content to back it up, or play the stream directly from a local hard disk. This was all made possible by a young man by the name of Jon Lech Johansen (more widely known as *DVD-Jon*). Jon was instrumental in reverse engineering the protection methodologies in DVD content so that end users could rip to hard disk, and to save their pressed media from destruction. And in fact, without this, Linux users wouldn't even be able to play DVDs under Linux at all.

For several years now we have lived in comfort, knowing that if we have a DVD movie and want to play it from our hard disk or put it onto a different media-type, things just work. In an effort to circumvent the possible use of decoding and ripping DVDs for piracy Hollywood has, in conjunction with technology partners such as Macrovision, Intel and the Digital Content Protection LLC, put into motion a new set of content protection methods which are already being implemented and set to come into full force in the near future.

These copy protection methods, falling under an umbrella name of *HDCP* (High bandwidth Digital Content Protection), not only stop the end user ripping media from a disc as with the original DVD copy protection mechanisms, but also takes this one step further and prevents any copy protected material even being *displayed* by a monitor.

Copy protection has, for all intents and purposes, moved from the software to the hardware. While HDCP still needs operating system support to operate, it also requires HDCP compliant devices in order to display HDCP protected material. It doesn't matter if you are the original owner of a protected DVD, without compliant HDCP equipment you won't be able to enjoy your purchase.

So what exactly is HDCP and how does it work? And more to the point, what is to become of your soon-to-be-obsolete equipment?

Defining HDCP

HDCP was originally developed by Intel as a protocol to protect high definition content transferral across DVI (Digital Visual Interface) and HDMI (High Definition Multimedia Interface) interconnections. The protocol has been in existence since September 1999, when the first specification document was released. It is now up to revision 1.2a, as of 10 May 2006.

The purpose of HDCP is to prevent the end user viewing or ripping high definition content on non-authenticated devices. This high definition content generally comes in three forms:

1. HD-DVD (High Definition) or BD-ROM (Blu-ray) movie discs;
2. High definition digital television broadcast signals/digital cable set-top transmissions;
3. High definition VGA card sources (games, movies, other content direct from the PC to the digital display panel).

HDCP achieves content protection through the use of a *key-exchange* infrastructure. One of the key (yes, a pun) features of this is the ability to revoke keys from devices manufactured by vendors who violate license agreements between the content producer and the display device producer.

Here's a practical example: If the end user attempts to playback a HD-DVD or BD-ROM movie on their PC, using simple software hacks (think of it like using a version of AnyDVD on steroids!), the system can report back to the central key-authority, revoking and black-listing the keys used on the user's PC, thus rendering it useless for all current and future playback, within this configuration. Attempting to use these software bypass methods will result in a blank screen, or a message saying that an illegal attempt has been made to display content on a non-compliant system. Now this said this assumes that all the companies, vendors and stake-holders agree that this level of network connectivity/awareness is acceptable. As it is, this level of control is still in the foetal stage of development, but *it is possible* with HDCP.

Get on the bandwagon

Not surprisingly, the introduction of HDCP hasn't been well met by all parties especially in regards to computing/information devices. A list has been compiled of current HDCP licensees who will implement the protocol according to the Intel specification – www.digital-cp.com/list.

This significant list of companies (approximately 368 at last update) represents

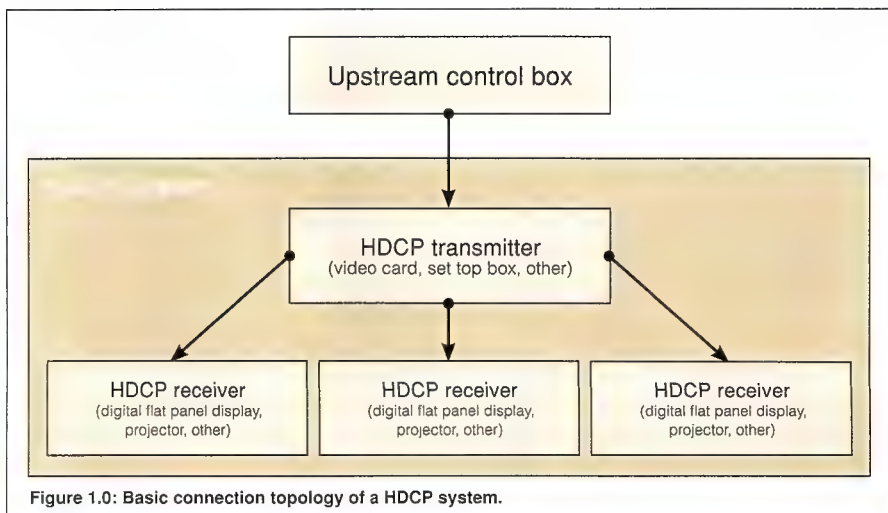


Figure 1.0: Basic connection topology of a HDCP system.

all those willing to use HDCP in an effort to prevent content ripping and digital transferral of media other than for the exclusive private use of the end user, on a stand-alone dedicated, authenticated hardware platform. The key drivers in implementing the protection on the Hollywood movie studios side are Warner Brothers and the Walt Disney Company. This will translate to all Warner Brothers or Disney based movies (whether it be BD-ROM or HD-DVD) being in some way protected or locked down via HDCP. What of the other movie studios and companies? At this stage, they are yet to jump onboard, somewhat wisely waiting for the reactions of the general public, before making commitment to what amounts to a largely unknown Digital Rights Management technology.

Inside HDCP

The method a particular system uses to communicate is referred to as a protocol. HDCP has its own internal protocol to follow. To understand it, we need to have a clear view of the objects in the HDCP environment. In Figure 1.0, we see three basic components: the upstream control function, the HDCP transmitter and the HDCP receiver. These simple components make up the HDCP-aware environment.

Within this environment, between the transmitter and HDCP receiver, authentication needs to take place before the devices recognise each other as acceptable hosts. This authentication occurs when the transmitter sends commands to the receiver. At this point, if the display device is compliant, it will send back commands using a set of device keys. These device keys come from Digital Content Protection LLC.

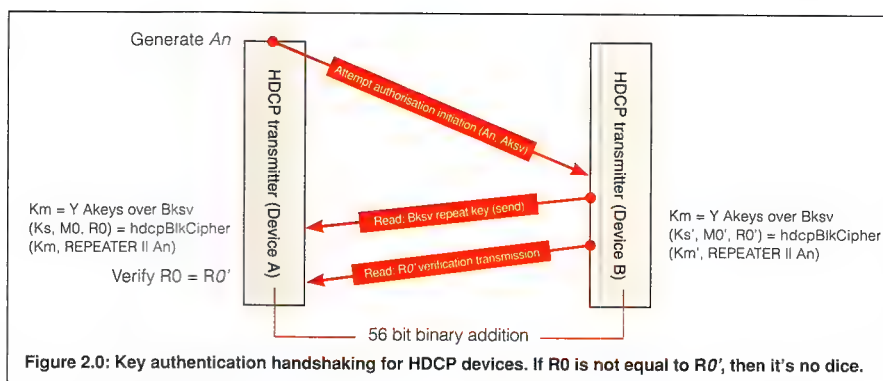
Following this, should the transmitter get back an appropriate set of device keys, it will display its own set of keys to the receiver. Once both sides have displayed to each other their key-set, a checksum for these two specific devices is created in volatile memory, and authentication is completed. The next time a new device or display combination is connected by the user, the same process will take place all over again, and a new checksum will be generated.

It sounds all nice and simple, but how does it all click together?

Talk to me baby

Any HDCP compliant device should contain 40 56-bit confidential device keys. These are known as *Device Private Keys*. The easiest way to visualise keys is as a set of unique fingerprints. No other device has the same keyset, at least in theory. Digital Content Protection also provide a header to these keys, known as a KSV (Key Selection Vector). This is a 40-bit binary value. The process of communication between devices with these key interactions is displayed in Figure 2.0.

Initiation of communication between devices starts with the HDCP transmitter sending a 'hello' message, containing the KSV for the device (Aksv). A value is calculated from the



first point of contact, here, named 'An'. The function that controls this calculation is known as 'hdcpBlkCipher'. Once this process has taken place, the HDCP receiver sends back its KSV (Bksv). After this, at some point, if the authentication integrity is in doubt, the transmitter checks (potentially phones home) to make sure the HDCP receivers keys have not been revoked (or, if in the instance they are somehow fake, sends back information saying so, shutting down the device key). So now that the two devices have communicated correctly, can we start sending content? Not quite. First, we need to generate the checksum mentioned earlier. According to the specification, this is a 56-bit binary addition based on the two KSV's 'An' values. If R0 is equal to R0', then content will begin to stream between transmitter and receiver. If for some reason R0 is not equal to R0', the authentication process is reattempted.

This is complicated further if the HDCP transmitter and receiver detect a repeater scenario, where there may be more than one device on a DVI/HDMI link chain. An additional third layer of authentication exists on a per-frame basis. The very frames of data sent through the DVI/HDMI cable are authenticated and verified every two seconds. You know, just to be sure.

Ultimately, it ensures content can be protected if not at the media level, then at the display level. And it's a lot harder to circumvent when it's built into the hardware.

So what about me?

Despite marketing hype, and eager companies wanting to ride the buzz bandwagon by adding HDCP early on, the fact remains that today's 'HDCP capable' components actually aren't. You might be wondering how the vendors claimed that it was to begin with. Originally, ATI and NVIDIA claimed their hardware was HDCP compliant, announcing that it would work with next generation HD content. This was fine, given the GPU was capable of outputting 1080i/p rated resolutions, but as we have discussed, there is more to HDCP than extreme output resolution! The missing piece of the equation comes in the form of HDCP keys from the central authority that cannot be retrofitted onto these graphics cards. It is impossible to flash keys onto the BIOS of the video card, because the addressable space within the PROM is finite and only has enough

space for instructions originally coded for it. It needs a dedicated chip designed for this purpose that's simply not present on current generation cards.

So that stunning NVIDIA 7900 GTX system and, chances are, the swanky new LCD monitor too won't be able to display HDCP content, even if the marketing hype has said otherwise. Truly HDCP capable monitors are only now starting to appear on the market. Some relevant reading for the video-card non-compliance issue can be found over at Firingsquad (www.firingsquad.com/hardware/ati_nvidia_hdcp_support). A list of current model flat panel monitors supporting HDCP are summarised in table 1.0 below.

All current devices without HDCP compliance are to be dealt with in the following way. If in the instance the output device and video hardware cannot support HDCP authentication and the media/content provider has elected to use the protection bit in HD-DVD/BD-ROM lead in (physical media), the movie/game/content will not be displayed in full, high definition 1080i/p. Instead you will either get:

- A blank screen, telling you that your display device(s) are unsupported or;
- A down sampled version of the content, running at 480i/p.

Company/Brand	Model
Gateway	FPD2185W
HP	F2105
NEC	MultiSync 20WMGX2
Samsung	SyncMaster 244T
ViewSonic	VP2330WB
Dell	3007FPW
Dell	2407FPW
Dell	2007FPW
Samsung	214T
Samsung	930MP
Samsung	940MW
Samsung	242MP
Sony	MFM-HT95
Sony	MFM-HT75W

Table 1.0: HDCP 'compliant' monitors as of the 10 May 2006.

Some companies, such as Sony, have back-flipped on the decision to implement this Image Constraint Token (ICT) in their video releases, due to growing pressure from the consumer market and a need to encourage uptake of Blu-ray players in the home.

Living with HDCP

HDCP has been in the consumer living room/electronics market, has been dealt with and is now accepted by users as a fact of life. For PC users, however, the future is less simple. At this stage, a great deal of documentation exists to suggest HDCP is already a 'cracked' protocol, given it is susceptible to interception upon the 'handshaking' or negotiation process. In 2001, the first demonstrations of weaknesses in the protocol were shown to the public. Unlike *The Da Vinci Code*, this reasoning has a strong basis in the real world, and mathematical reasoning to boot. The cryptologists behind the findings were Scott Crosby (from Carnegie Mellon University) and Ian Goldberg (from Zero Knowledge Systems). Crosby made the following statement:

'I show that with the public and private keys from 40 devices and $O(40^2)$ work I can violate the design requirement – I can access the plaintext. Furthermore, with the 40 sets of keys and at most $O(240)$ offline, I can usurp the central authority completely.'

Crosby (in saying that he could usurp the central authority) was pointing out that with enough keys, one could have enough 'guesses' at the correct checksum between two endpoints, in effect making a 'fake' device which is HDCP compliant, for the transmitter/receiver to bind and check against. There is, however, another layer of complication to consider. This is known as HDCP+certs. The premise is that the central authority could (potentially) add cryptographic certificates to public keys. This would mean that each device would have a new secondary unique signature, signed by the central authority. It is speculated that this would use some standard algorithm such as RSA/DSA. This way, the HDCP receiver would send the public key and signed certificate with authentication only working if the certificate can be verified on the other side.

HDCP has a weakness from the beginning, much to the pain of Intel, being that it relies upon what we call *Linear Key Exchange*. As data is transferred from one point to another

it's possible to eavesdrop on the data and see what's happening. Because of and based upon the 56-bit, 40 key set processes between the transmitter and receiver, it's possible to 'clone' any device, to make it look HDCP compliant. This in turn allows the user to prevent any black-listing of devices and ultimately completely circumvent the central key authority.

Whether you agree this is a good or bad thing depends on which side of the fence you sit. For the movie studios wanting to control how and when their products are used, this is obviously a bad thing. For the user who would like to play their purchase how and when they see fit, it could give them hope. That said, make no mistake that HDCP is much more resilient than anything that has come before it and there's no guarantee there will ever be any easy way to circumvent it.

It's in the gear

Well, maybe. As a combined hardware and software digital restrictions management system any form of trying to bypass is more than likely going to need a hardware solution. It comes somewhat as a surprise that there are already hardware solutions to the problem available on the market, known as 'HDCP strippers'. These devices sit in between the source player and display device, and effectively (through a little tomfoolery of their own) strip out HDCP part of the protected content. Figure 3.0 shows such a device, the Spatz DVIMAGIC stripper, and is one way users who are left out in the cold by

the HDCP revolution might deal with the issue of being unable to play HDCP content.

Through the use of a HDCP stripper, the user can output the protected signal to any capable device, whether it be analog, digital, CRT, LCD, projector or otherwise, without the restriction of a HDCP key set needing to be embedded in the receiver or target device.

Future proofing

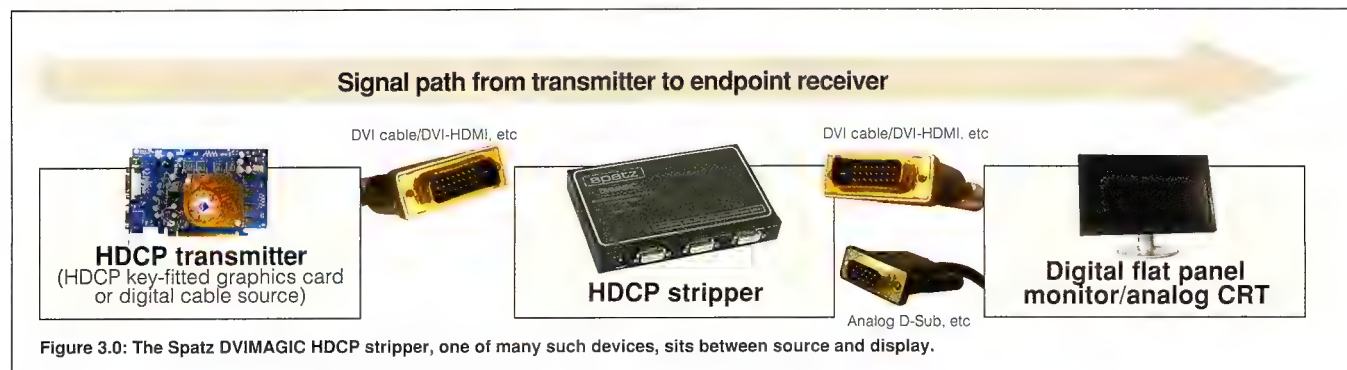
At the time of writing, no HDCP capable video cards for PCs exist on the market, and most display devices currently available are more correctly termed 'HDCP compatible' due to the use of an older version of the HDCP specification (1.0, as opposed to 1.2a). This, apparently, has been causing problems for early adopters, with reports of handshaking and connectivity problems for HDCP enabled content.

Ultimately, whether you like it or not, you will need to consider HDCP in your future purchases. If you buy cutting edge equipment now, be aware it's not HDCP enabled. It's possible you can get a new display that's at least using the 1.2a specification, and this will future proof you in terms of your display, but if you want to playback HDCP content on your PC and you also are in the market for a new video card from the range currently available, be aware you'll need to buy another card down the track once HDCP support becomes standardised.

As usual it's the consumers that get the blunt end of the stick, all to satiate the movie moguls.



HDCP begone: The Spatz DVIMAGIC HDCP stripper.



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7.1



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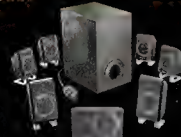


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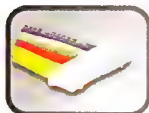
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**NEWS, REVIEWS AND ROUND UPS ON THE LATEST
HARDWARE TECHNOLOGY FOR YOUR BOX**

While this is only half of the picture, comparing the two sides tells you more. Although NGLC claims which I found the Sony PR the # 1 reason and support would be exceeded. His reply is "they are" - was the a leading lady of revolution. Subsequently I proposed the 1950's to the nation, across the land, replacing the traditional PC with the use of natural people, not to pay attention. This was Sony doesn't have to be in relation to the of having Nintendo's name. When you consider that the only thing they have, the whole economy and social and count in theory, from word processing and communications, is capable of running top notch games, and it could be, that a good economy, the idea of a (reaching) PC doesn't even exist, no way.

Bonneti **Società** **gruppo**
Alberi **di** **legno**



Holographic storage? Guess we better throw in a picture of the Doctor again then.



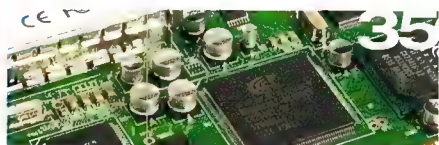
Dan Rutter serves up his usual mad platter of brain matter



Gizmos for the game. Gearbox is our loving hidey hole of shiny stuff.



Three cards, in a royal rumble grudge-match that would make even Hulk Hogan tremble.



HDTV is the future of TV. Or so they keep telling us. Right now it looks mostly the same.



The top of the pops. If we saw it, benched it and loved it, this is where it ends up.

hardcore: *serious*

Thermaltake Eureka	40
Lian-Li PC-S80	41
USB 2.0 to SATA/IDE adaptor	42
Seagate 7200.10 750GB	43
Sytrin KuFormula VF-1	44
Acer AL1951	44
Arctic Cooling Freezer 64 Pro	46
Thermaltake Big Water 735	46

short circuits



BITBOYS

ATI has bought BitBoys, a Finnish company that never did get to finish (pun!) bringing a 3D accelerator to the desktop market, but that didn't stop it bragging about how it was better than everything else. Nonetheless, BitBoys mobile phone market penetration is what ATI has had its eye on, and now has its paws on as well.

AMD recently dropped prices on its single core chips, once again foreshadowing the multi-core onslaught that is to come.

Google has bought @Last, and in the usual trend has released its 3D software 'Sketchup' for free. Different to the trend, however, is that Google is now offering a 'professional' version at a price. There have also been plugins released for Google Earth and 3D Warehouse, so 3D structures can be added to the controversial mapping program, or stored for sharing with other people online.

Ebay-owned Skype recently announced that it has 100 million users registered. The VoIP ball keeps on rolling, but we remain sceptical that it will ever roll over the traditional telcos.

After all the complaints surrounding Samsung's favouritism towards Apple in regards to memory chips, the Korean giant has now won the contract to produce the media processor for all next generation iPods over previous manufacturer PortalPlayer. This is, of course, a big win for Samsung, meaning it'll benefit from every bit of Apple's market dominance.

The Xbox 360 CPUs will undergo a die shrink from 90 to 65nm soon, meaning lower production costs and most importantly, less heat problems for Microsoft's shining white console.

HyperTransport 3.0
AMD raises the interconnect bar and pushes bandwidth into hyperdrive.

AMD has enjoyed great success with its HyperTransport technology, allowing high bandwidth interconnectors between components on a motherboard. The third revision spec for HyperTransport (startlingly called HyperTransport 3.0) has now been finalised and brings with it some nice changes.

The first and most obvious is, of course, a bandwidth increase, achieved by increasing the clock from 1.4 to 2.6GHz, and consequently the bandwidth from 11.2GB/s to 20.8GB/s.

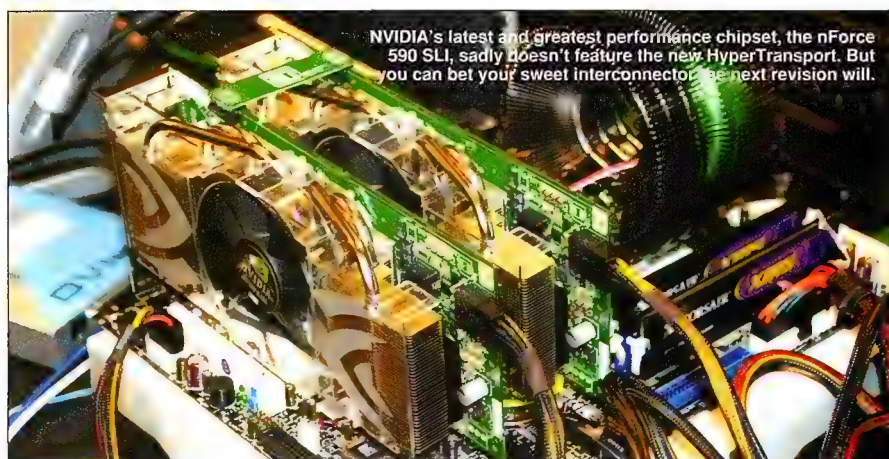
Of course, it's more than just the near doubling of bandwidth, with the mandatory additional features being tacked in as well. Data can now be sent over a metre without degradation and hot-plugging has been included, enabling devices to be added and removed to the data stream without interrupting or destabilising the system. Both of these options, on the server scale, mean HyperTransport is now quite viable for inter-computer connections. Indeed, a new physical interface, HTX, was also announced, allowing chassis to chassis communication

through HTT, not just the usual component to motherboard connection. HTT has even taken a few potshots at PCI-E along the way, although we doubt it'll be able to usurp that in the consumer space anytime soon. Still, high bandwidth external interconnects? Yes please.

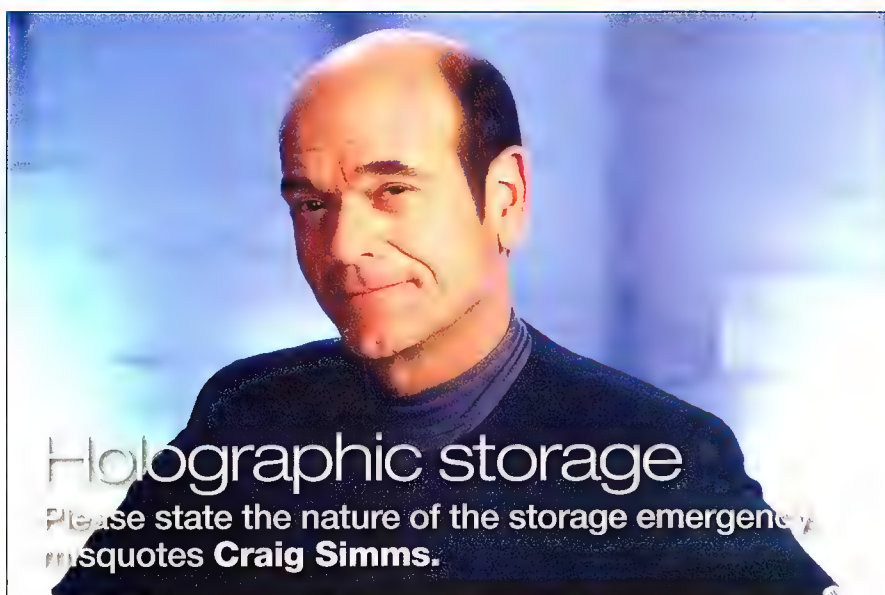
A new 'unganging' mode has been added, allowing the HTT stream to be split into two 16-bit pathways rather than one 32-bit at system power up. This is most useful in multiprocessor or multi-core solutions where high I/O is present – for example, in a dual core solution, each core could get its own HyperTransport pathway, rather than having to fight over the single one.

Power management has also increased in complexity, allowing components on the HTT pathway to manage their consumption transparently to the OS, cutting down on the electricity required.

Happily, HTT 3.0 is backwards compatible with both 1.0 and 2.0 – the only down side is, it'll only be abused to its full potential in server rooms, and not so much on the desktop.



NVIDIA's latest and greatest performance chipset, the nForce 590 SLI, sadly doesn't feature the new HyperTransport. But you can bet your sweet interconnector, the next revision will.



Holographic storage

Please state the nature of the storage emergency
— **Craig Simms.**

It seems that this one pops its head up once every six months, but holographic storage is once again on the cards with Daewoo cracking out a working model – frustratingly without actually mentioning any specs.

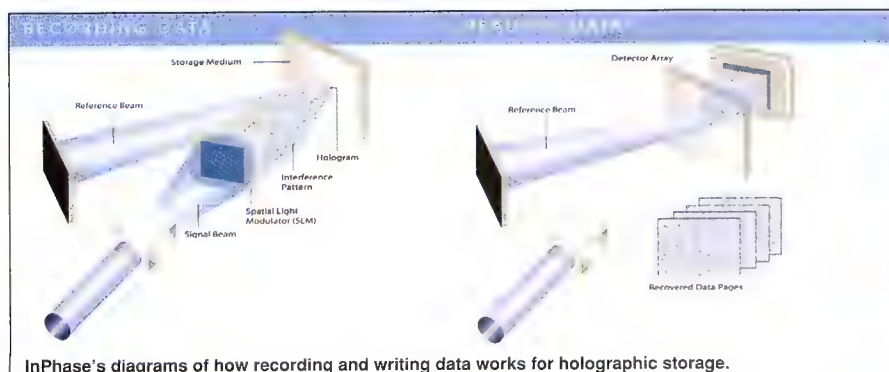
For those unaware of the concept, much like a conventional hologram where the image changes as the viewer's perspective does, as the read head moves around it reveals entirely new layers of data, allowing massive storage of data into small amounts of space as a result. Of course, a single laser across a three dimensional penetrable surface would only provide access along a plane (a signal beam), so point data is written by introducing another laser (the reference beam, which carries no actual data) and writing to the intersection of those two lasers. The data is written into a pattern of light and dark patches, interpreted as 0s and 1s by a spatial light modulator, or SLM. To read back the data, at this point in time only the reference beam is required.

InPhase technologies (a division of Bell Labs) seem to be the leader in the field at the moment, but IBM, Aprilis and Maxell are researching the technology as well – people seem to really want holographic storage. All companies at this stage appear to be employing slightly different techniques, mostly focused on the chemical composition of the media, in order to minimise

'ghosting' – echoes of the data that still appear from the edges when the angle of incidence changes slightly. By all reports, this has mostly been overcome.

However, in the time it's taken to get holographic media to this stage, ordinary technology appears to have overtaken InPhase's solution in a few key areas. Its specs include a mind bogglingly slow 20MB/s sustained read and write speed, although it does sport a 350Gb/in² data density compared to say Seagate's 130Gb/in² for its perpendicular recording. Seagate says it'll eventually be capable of pushing 500 (and has demonstrated 245), while InPhase has already demonstrated a nice 515.

In saying this, capacity isn't great at the moment, with only 300GB available per cartridge – TDK recently announced a 200GB disc for the Blu-ray 'standard', without using the multiple angles advantage of holographic technology. Maxell, InPhase's media partner, claims that the media is capable of up to 120MB/s transfer rates, and promises up to 1.6TB worth of storage – however, it's going to require a lot more work and some revamping to make holographic storage look as amazing as it once did – it now has to compete to replace both hard drives and CD drives at a competitive price for the public to take notice.



InPhase's diagrams of how recording and writing data works for holographic storage.

short circuits

Fujitsu has released what it is claiming to be the world's largest storage array. The ETERNUS range uses 2760 500GB drives for a total of 1.36PB (petabytes) of data. That's 1,360,000 GB for those playing at home.

Quad SLI is set to receive an update, before it even really hits mainstream. The 7950GX2s will feature the mobile rather than desktop chip, to cut down on the physical size of the board and also the heat. Unfortunately, it probably won't stop it sucking for the moment.

FACT (The UK equivalent of the MPAA) has trained sniffer dogs to track down DVDs, so they can pick up counterfeit discs entering the UK. Presumably, they can't tell the difference between pirated or real discs, meaning anyone that's bought a DVD overseas will probably get pulled up. What we want to know is, can the dogs decode CSS just by sniffing?

HOT OR NOT

Your monthly guide to fashions and faux pas in the tech industry.

Winter

Good for CPUs and snuggling.

Summer

Hot sticky bodies. Wait a minute...

Perpendicular recording

More bits for your buck.

Parallel parking

Craig still can't do it.

Nintendo Wii

Oh c'mon, seriously now.

Microsoft Pu

It has to happen.

E3

Tech pleasures extreme.

e

2.71828 what? It may as well be 3.

Portable tech

Take it everywhere.

Port-a-loos

Smelly infinite depths.



GROUND ZERO TECHNOLOGY FROM THE FRONT LINES

StegoBack!

The ultimate backup system is out there, on the Net, says **Daniel Rutter**.

Here's a modern truism for you: The more legal something is, the less backed up it'll be.

As curmudgeons like me have said on numerous previous occasions, data you haven't backed up is data you do not want. But the fact remains that a lot of people just don't do backups. Then they have some huge data loss disaster – thesis, accounts, passwords for everything, all gone. Then maybe they start making excellent backups, but they probably just start making half-assed backups that're better than nothing.

If your wicked reprobate of a cousin has illegally downloaded a bunch of music, movies, TV, software, game ROMs and art photos of drystone walls in Kentucky, though, the only reason he probably has to back any of them up is so that he won't have to download them again. Unless something's rather obscure, it'll always be waiting for re-download. And when he *does* I have to download something again, he may well find a better version available – DVD rips instead of TV rips, for instance.

It's like new-for-old-replacement insurance, with no premium.

One day, *really fast* broadband Internet connections and close-to-free storage and some encrypted and anonymised Freenet-ish encrypted hippy trippy data-mist will let us all back up our stuff on everybody else's computers for free, but that unicorn-riding day isn't here yet, and will never *never* be here if the media companies have anything to do with it.

In the meantime, every second joker suggests renaming accounts.zip as belgianmonkeypr0n.avi and making it available on all of your favourite P2P networks, as a means to ensure a global backup service. The jokers that thought this through more suggest you name the file WinServ03Datacenter.iso, because that increases the chance that lots of teenagers will download it and share it and never check to see whether it's really what it says it is, then delete it when they're disappointed.

The debate continues.

You know what, though? That goofy idea could actually work, with a bit of fiddling.

A lot of illegally shared files, you see, are pretty darn large. And many of the things that people want to back up are, in comparison, small. So the solution's simple enough: Backups *embedded* in P2P-shared files. The files are still what the filename says they are, so people will share them. But the backup data's in there too.

This could be done by fancy steganographic means, with the backed up data hidden in the audio and/or video, but there's no reason to go to those lengths. All you need to do is tack your data onto one end or the other of the file, and that's surprisingly easy. Use well-known formats (JPEG headers, ID3v2 data for MP3s...) and it's all nice and legal-like. Or, for many formats, you can just tack your data on the end of the file after the normal footer.

If you attach 500MB of email to one fake nude celebrity pic then it's likely to attract a certain amount of suspicion, but it's easy to split data into multi-volume archives, encrypted if you like, and store it spread across many files. And all of my income tax files and GST software digital certificates and so on will fit very comfortably in a one megabyte archive. Tack *that* – suitably encrypted – onto a single file of unremarkable size and nobody's likely to notice.

This is not, of course, very practical. Legality aside, it'd scale into thousands of different versions of every file on every P2P network, each shared by only one person.

But, startlingly enough, 'StegoBackup' actually *could* be pushed into some semblance of functionality. Especially if you started out with unshared public domain movies from **archive.org**, or your own video clips.

Personally, I think it's all worth the effort just to screw with the Net-spying spooks. If they want sooper sekrit hidden encrypted files, let 'em have 'em – but make the content someone's first year Actuarial Studies essay.

Dan has what we call a 'smile' on his face.

dan@atomicmpc.com.au



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RAVE REVIEWS

cont.

Aug. 26, 2005

"Absolutely exceptional memory capable of lower latency timings at stock speeds and still pull through with a jaw dropping overclock to boot."

tweaknews.com

Aug. 31, 2005

"In our tests, the PQI3200-1024DBUs turned out terrific performance along with impressive overclocking results....to top it off they're priced to sell!"

hothardware.com



THE ULTIMATE MEMORY FOR Hardcore GAMERS

GEARBOX

ALL THE BEST AND
COOLEST GADGETS
AND GEAR!**i-Rocks Portable USB 2.0
Card Reader**Supplier **Anyware**Website www.anyware.com.auPrice **\$25**

Photographers are an interesting bunch, digital photographers more so. Always in need of space, they don't necessarily want to disable their camera by chaining it to the laptop to transfer images. This nifty card reader supports MMC, SD, mini SD and T-Flash, so it's great for PSP users as well.

**CoolerMaster XCraft**Supplier **CoolerMaster**Website www.coolermaster.comPrice **\$70**

The XCraft external HD enclosure looks sleeker than it really is. It's SATA, which is nice, and comes with ports for USB A and USB B, as well as an E-SATA port, but beyond that, it's nothing special. The build quality is flimsy, the plastic clip-lock mechanism easily breakable, and the blue 'CoolerMaster' button on the front a tad naff. It does, however, provide good cooling as promised.

Gear4 PocketPowerSupplier **Disruptive Technology Channels**Website www.disruptivegroup.comPrice **\$60**

The world doesn't have enough iPod accessories. Seriously. We wouldn't be surprised if something comes out that powers it via running bathwater and comes with a waterproof skin so you can listen to music while submerged. But we digress. This gadget is an emergency power reserve, run off four AAA batteries for said white object of joy, can power other NiMH devices that have a USB input and even comes with an LED torch should you run out of power in the dark. Just make sure you have your original USB to iPod cable.

**Belkin Flip**Supplier **Belkin**Website www.belkin.comPrice **\$99**

KVMs are still using D-Sub in the 'affordable' range, with DVI KVMs being not only rare but expensive. Belkin's little 'Flip' is still D-Sub, but is designed with a cute Apple style (but with colours, oooh!) unlike the usual boring black. The round disc can be clicked to 'flip' the input to another machine, hence the name. Geez those marketers are clever buggers, aren't they?



**Plantronics
Audio 350**

Supplier Anyware
Website www.anyware.com.au
Price \$60

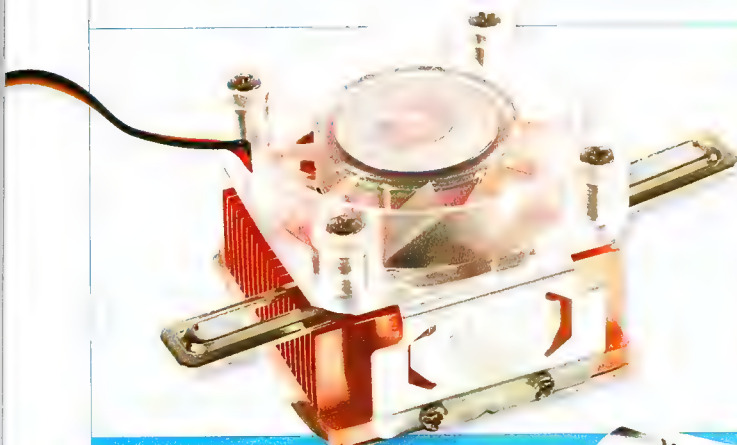
Xbox headset makers Plantronics have been doing PC headsets for a bloody long time too, usually aimed at the budget conscious, and covering almost every application you can think of. These ones are perfect for those long nights handing out 50 DKP minus in World of Warcraft, recording your impressions of Neil Diamond or talking to your 'special person' over the Internet with the aid of Skype or MSN. Just clean up carefully when you're done, sicko.



▼ **CoolerMaster Blue Ice Pro**

Supplier **CoolerMaster**
Website www.coolermaster.com.au
Price **\$20**

It's a fan. It's a heatsink. It's for your *northbirdge*, and it even sports blingy blue LEDs. The top beef here is the pure copper block and 'super silent' fan. Spinning at 4500rpm, it's not exactly silent but it is quiet enough that you won't hear it in a closed case. If you need to replace your whiny old NB fan, the Blue Ice Pro will do nicely.



▲ Hyperglide Mouse Skates

Supplier GamerzStuff
Website www.gamerzstuff.com.au **Price** \$15

Mouse skates are getting pretty boring, unless you've never heard of them or tried them – in which case, you'll delight in their Best Thing Ever qualities. Now, new in the slow-moving world of Teflon stickers are Hyperglide skates. These babies are *custom shaped* to fit your mouse. When a small round dot works perfectly well, Hyperglide instead has a fancy range tailored to fit most recent mouses from Microsoft, Logitech and Razor. Fatal1ty would approve.

TRENDnet 02.11g
USB adaptor

Supplier: TENDON
Website: www.tendonit.com.au
Phone: 01208



BENCHMARK

HOW WE TEST
WHAT WE TEST
WHEN WE TEST

Benchmark. It's an odd word. It brings with it visions of a carpenter, hunched over, worn with the effects of his trade and age, focused on a single spot, etching a small indentation precisely into his workbench. A measurement of perhaps how long something was, or how deep something would cut – and hence how it stacked up, or performed compared to other somethings.

Fast forward to today, and it's the same thing, just with software, thermal goop and probably just as many sliced fingers.

3DMark05 and 06 are the legs of our bench, as freely downloadable tools they allow people all around the world to compete on a single platform, regardless of its indication of real world application, and keeping our table stable.

On the gaming surface, Call of Duty 2 takes first honours in the FPS department. Quake 4 follows closely behind for our OpenGL benchmarks, taking over from where the venerable Doom 3 left off and offering multiple CPU optimisations. Half-Life 2 remains, its market penetration simply too huge to ignore. X3: Reunion makes an appearance, in an effort to have a benchmark that is not an FPS. In the same line, Splinter Cell: Chaos Theory has also been added. Other games do exist. Honest.

All these tests are run at 1280 x 1024, 1600 x 1200 and 1920 x 1200 with vsync off, to cater for the most popular TFT resolution, CRT resolution and those who own widescreen monsters respectively.

To hit the CPU, we use LAME MT, a multi-threaded version of the popular MP3 encoder, which is used to compress a standard 30 minute WAV file. Similarly, VirtualDubMod is used to compress a standard 1GB raw video file into XviD at 1300Kb/s. Other CPU specific tests in our stable are Maxon's CineBench and SuperPi Mod. Rounding out the suite, SiSoftware's Sandra tests several subsystems across the board, while HDTach and ATTO Disk Benchmark helpfully provide hard drive scores.

All these tests are run on a Windows XP SP2 platform, running the latest official drivers available. Every test is run three times to eliminate any oddities that may crop up along the way, the final result printed in the magazine being an average of those scores.

Of course, all this is pointless without a standard set of hardware, and as such it is laid out below for the world to see. On with the testing!

BENCHMARKS

Graphics

3DMark05

Game tests only, 4xAA, 8xAF
www.futuremark.com

3DMark06

Game tests only, 4xAA, 8xAF (SM2.0), 8xAF (HDR/SM3.0)
www.futuremark.com

Half-Life 2

Canals custom timedemo, 4xAA, 8xAF, all details highest, HDR off
www.half-life2.com

Splinter Cell: Chaos Theory

Lighthouse Demo, Shader Model 3.0, 8xAF, shadow resolution high, all features on
www.splintercell3.com

X3 Rolling Demo

High settings, auto quality control disabled, glow enabled, 4xAA, 8xAF
www.egosoft.com/games/x3/info_en.php

Call of Duty 2

Hill 40 – Defend custom timedemo, 4xAA, 8xAF, all options highest
www.callofduty2.com

Quake 4

High quality, 4xAA, 8xAF, Multiple CPU support, all options highest
www.quake4game.com

Subsystems

HDTach

www.simplissoftware.com

LAME MT

softlab.technion.ac.il/project/LAME/html/lame.html

VirtualDubMod

virtualdubmod.sf.net

SuperPi Mod

www.xtremesystems.com/pi

Cinebench

www.cinebench.com

SiSoft Sandra

www.sisoftware.co.uk

Everest

www.lavalys.com

Others

DisplayMate

www.displaymate.com

ATI Tool www.techpowerup.com/atitool

RivaTuner

www.guru3d.com/rivatuner

FRAPS

www.fraps.com

CPU-Z www.cpuid.com

Stress Prime 2004
sp2004.fre3.com

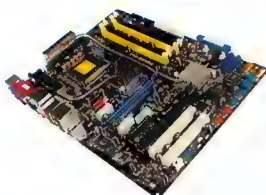
ATOMICEBENCH Our standard hardware that gets tested later on

intel



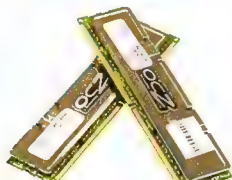
▲ Intel Pentium 955 EE

ASUS



▲ ASUS P5N32-SLI Deluxe

OCZ Technology



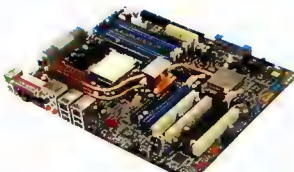
▲ 2GB OCZ PC2-4200EB

AMD



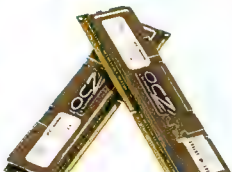
▲ AMD Athlon 64 FX-60

ASUS



▲ ASUS A8N32-SLI Deluxe

OCZ Technology



▲ 2GB OCZ PC-4000EB

WD Western Digital



▲ Western Digital 1500ADFD

PC Case Gear



▲ Seasonic S12 600W

DELL



▲ Dell 2405FPW

MSI MICROSTAR INTERNATIONAL



▲ MSI 7800GT

FRAMERATE

OUR LOOK AT THE
FAST, THE FURIOUS
AND THE PRETTY**ASUS
EAX1900XTX**GPU **ATI RADEON X1900XTX**Memory size **512MB**Core clock **650MHz**Effective memory clock **1550MHz**Memory type **256-bit GDDR3**Pixel pipelines **48**Vertex shaders **8**Video out **DVI; D-Sub adaptors;****S-Video; composite; component**Video in **S-Video; composite**Price **\$999**Supplier **ASUS**Website **www.asus.com.au**

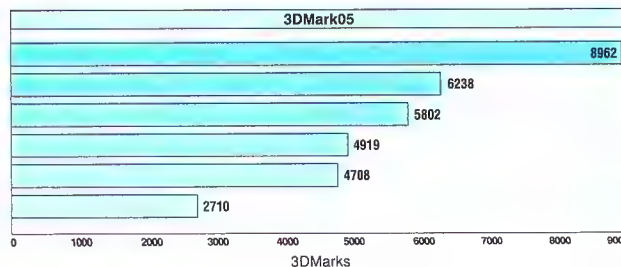
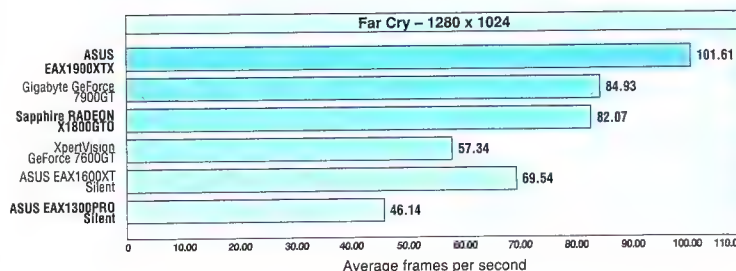
As you may be aware, the X1900XTX is currently the meanest available slab of video card on the market. It is slowly dipping in price, this being the least expensive X1900XTX to feature in Framerate; by a whole green Sir John Monash. If you're looking to unleash a world of pain and terror on both your wallet and your machine – by which, of course, we mean a matrix of hot transistors and awesomeness – then quite simply, get this. It's not the quietest, but then neither is a Boeing X-43.

**Sapphire
RADEON X1800GTO**GPU **ATI RADEON X1800GTO**Memory size **256MB**Core clock **500MHz**Effective memory clock **990MHz**Memory type **256-bit GDDR3**Pixel pipelines **12**Vertex shaders **8**Video out **DVI; D-Sub adaptors;****S-Video; composite; component**Video in **None**Price **\$TBA**Supplier **Achieva**Website **www.achieva.com.au**

With the speed delivered by the X1900, ATI was left with a lot of unused X1800 chips. Thus, it dropped four pipelines (inventively known as a quad) from the X1800 and passing them off as GTOs. The reason this card edges toward the decent performance of NVIDIA's 7900 range, even though it has half the pixel pipelines, is because of the higher clock speed all thanks to the reduced 90nm fabrication size. Equipped with VIVO, this mid-range card is packing serious all-you-can-eat punch.

**ASUS
EAX1300PRO Silent**GPU **ATI RADEON X1300 PRO**Memory size **256MB**Core clock **600MHz**Effective memory clock **800MHz**Memory type **128-bit GDDR2**Pixel pipelines **4**Vertex shaders **2**Video out **DVI;****D-Sub; composite**Video in **None**Price **\$199**Supplier **ASUS**Website **www.asus.com.au**

This isn't a card to itch your groin over, but it wasn't designed for obscene speed and crazy thrills. In fact, it benefits from sitting on the slow side; as it is, out of the box, a completely silent card. Designed with a heatsink on a hinge – much like ASUS's Silencer cards – it makes use of the existing ventilation within the case. So that's a fat 'forget it' to you watercooling chums. If your HTPC is looking drab with its onboard graphics, this reasonably priced card would be substantially plausible.





VA1912w (19")

HOT PRICE
\$379 RRP



VA2012w (20")

HOT PRICE
\$519 RRP



VX2025wm (20")

HOT PRICE
\$569 RRP

SuperClear **VVA**



VP2330wb (23")

HOT PRICE
\$1,659 RRP

SuperClear **VVA**

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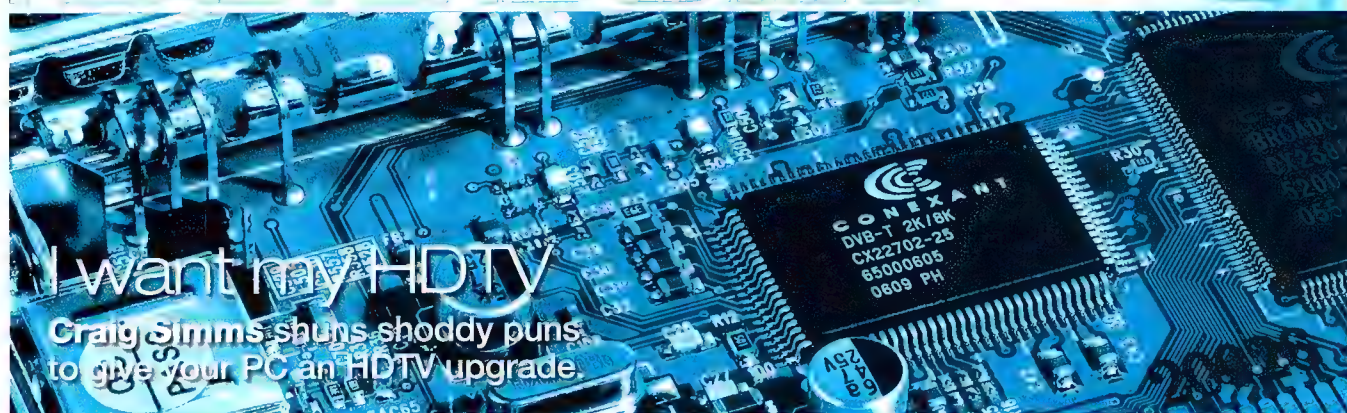
ViewSonic 
the choice of professionals

*Leading stand-alone, branded monitor by sales (CRT and LCDs combined); iSuppli/Stamford Resources Monitorak® and Flat Panel Monitorak® 2Q04 Report).
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HEAD TO HEAD

EYE-SMART COMPARATIVE
ROUNDUP OF THE
HIGHEST-BEAST

HEAD TO HEAD



I want my HDTV
Craig Simms shuns shoddy puns
to give your PC an HDTV upgrade.

TV tuners are historically a pain in the nether regions to install and get working, and due to the high resolution of monitors, inevitably had their signal ending up looking pretty naff at full screen.

HDTV promises wonderfully sharper, brighter, and better images than ever before. Well, except in Australia.

Most stations here are still broadcasting in 576p, since that's the minimum resolution required to be labelled HDTV, unlike the rest of the world which sets its bar at 720p. Buyer beware.

Even the stations that broadcast in 1080i (and even then, only 1440 x 1080) upsample a large amount of their content from SDTV, or in the case of advertisements, simply display them in native resolution, meaning they're surrounded by a large black border – very little content is shown in native 1080. To be fair, a full resolution of 1920 x 1080 requires a veritable crapload of grunt and bandwidth to view, so the low starting point is not overly surprising.

We've attached a table of what stations currently broadcast in (in the Sydney region), but of course this is only a guide (as upscaling can be involved).

You may have noticed that we said in the Sydney region – not all areas can get digital TV, and it's worth checking with your station that you can receive DTV in your areas before you rush out and buy a tuner, screaming 'I'll never own a TV again!'

You'll also want to make sure you get good reception – it's best if you have an aerial on the roof, rather than a smaller indoor antenna. Unlike analog which will happily go a little bit fuzzy or ghost in the absence of good reception, digital TV is either on, off, or as choppy as Battlefield 2

running on a 486. So in short: live in the right area, and have a good aerial. Buy one if you have to.

Don't get us wrong – there are advantages to digital television as a whole. For a start, there's the EPG (Electronic Programming Guide). This wonderful tool lets you see upcoming programs for the week, and simply click on them to schedule in a recording. It's like the Sunday paper, only better.

There's only one decent company running EPG in Australia at the moment, and that's IceTV – unfortunately it's a subscription service. Also, unfortunately, Australian TV stations are immensely protective of their schedules, and as such channel Nine has recently sued IceTV for infringing on its copyright simply for providing clients with what is being shown on the channel. It'll be interesting to see where this one heads.

There are other EPG options, way beyond the scope of this Head to Head, so you're strongly encouraged to check out www.xpmediacentre.com.au (and also www.dtvforum.info) and investigate them in your own time.

Didn't we just say there were advantages? For a start, digital television, whether HD or not, is better image quality than analog hands down. Also, as you're already downloading the video as a digital source rather than an analog one, it also means that recording a video stream is nowhere near as taxing – it only has to store the transport stream rather than re-encoding.

Then there's time shifting – a subset of recording, so you hit the button, walk away and do what you have to do, return and watch your recorded feature *while* it's still recording. This is an effective way of skipping ads, and eventually catching up with the current broadcast.

There are three flavours of tuners out there for your PC – the USB stick style, the box connected to USB, and a PCI card. By and large, we found the PCI cards got a stronger signal than the USB solutions, so if you have a slot spare, we recommend sticking with the old tech – the included mini aerials are also no good as a rule.

Windows Media Center Edition (MCE) compatibility is also something that you may want, especially if you're planning on building an HTPC. Note that MCE is considerably harsher than the included software bundles in regards to what it considers to be a good signal, and will often find less available channels.

We realise there are those who don't have MCE though, or simply don't care, and so we've rounded up all sorts of tuners to see how they fared.

How we tested

We plugged the tuners one by one into a fresh install of MCE 2005. Each card was then hooked up to a coiled dipole aerial and their bundled software, MCE compatibility and general performance were tested. Onto the fun!

Free-to-air (Sydney)	Resolution	Stream
Nine HD	1080i	MPEG2
Nine Digital	576i	MPEG1
Seven HD	576p	MPEG1
Seven Digital	576i	MPEG1
SBS HD	576p	MPEG2
SBS Digital	576i	MPEG1
ABC HD	576p	MPEG2
ABC Digital	576i	MPEG1
ABC 2 Digital	576i	MPEG1
Ten HD	1080i	MPEG2
Ten Digital	576i	MPEG2

Compro VideoMate U3

Supplier **Anyware** Website **www.anyware.com.au** Price **\$130**
Interface **USB** MCE compatible **No** Software **ComproDTV,**
Ulead PhotoExplorer, Program Scheduler Remote **Yes** Inputs **Aerial**

The U3's biggest problem comes from its wide shape – meaning that it may not be able to fit into some USB ports that are situated in a recessed area. Signal wasn't great, and timeshifting crashed ComproDTV. Sadly *unimpressive*.

6.5
OUT OF 10



NewMagic DigitalVision-HD

Supplier **New Magic/Multimedia Technology** Website www.newmagic.com.au/
www.mmt.com.au Price **\$299** Interface **USB** MCE compatible **Yes**
 Software **ShowShifter** Remote **Yes** Inputs **Aerial**

The DigitalVision was a rebadged Hauppauge WinTV Nova-T USB2. The included software, 'ShowShifter' didn't work, but thankfully the tuner worked just fine with MCE – even if the remote didn't. Signal was excellent, and it came with a free 30-day subscription to IceTV.

SCORE **8.0**
OUT OF 10



Leadtek Portable DVB-T USB 2.0 TV Box

Supplier **BCN Technology** Website www.bcntech.com.au Price **\$140** Interface **USB** MCE compatible **No**
 Software **WinFast DTV, PowerDVD6, muvee 3, Ulead VideoStudio 9, Ulead Cool 3D, DVD Movie Factory 4** Remote **Yes** Inputs **Aerial**

Leadtek's WinFast DTV software is the second best player of the lot (MCE pips it for usability), making it easy to watch TV. Remote is wide and unwieldy, and reception was a little dodgy. Home of the world's most annoying installer, which advertises Leadtek's other products before you can exit it.

SCORE **7.0**
OUT OF 10



MSI MEGA SKY 580 Digital TV USB

Supplier **MSI** Website www.msi.com.tw Price **\$130**
 Interface **USB** MCE compatible **Yes** Software **Presto! PVR**
 Remote **No** Inputs **Aerial**

MSI's stick comes with Presto! PVR, which is definitely the easiest of the bundled players to use, even if it is lacking in options. Unfortunately, the stick got the worst signal strength of the lot, meaning that many channels simply didn't turn up on the scanner. Connection to a roof aerial would definitely help.

SCORE **6.0**
OUT OF 10

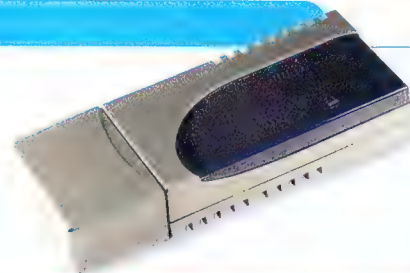


TwinHanDTV Alpha

Supplier **TwinHanDTV** Website www.twinhandtv.com Price **\$170**
 Interface **USB** MCE compatible **Yes** Software **TwinHanDTV, TwinHanData, PowerDVD 5.0** Remote **Yes** Inputs **Aerial**

The Alpha falls into the barrel as 'nothing special'. The software player is pretty shabby, which is therefore fortunate that the stick works with MCE, even if the remote doesn't. A budget brand with a not so budget price. Decent reception, but not great. You can do better with other entries here.

SCORE **6.5**
OUT OF 10



Pinnacle PCTV 60e

Supplier **Anyware** Website www.anyware.com.au Price **\$170** Interface **USB** MCE compatible **Yes**
 Software **ComproDTV, ComproDVD 2, Ulead PhotoExplorer, Program Scheduler**
 Remote **Yes** Inputs **Aerial, 3.5mm audio, composite, S-Video, remote**

Like most packages, the PCTV 60e remote didn't work with MCE, even though the box did. Despite this, it worked well and felt good. For some reason the installation was excessively slow, but it made up for this with good signal strength. Updating the drivers online made it MCE compatible.

SCORE **7.5**
OUT OF 10



Compro VideoMate DVB-T300

Supplier **Anyware** Website www.anyware.com.au Price **\$160** Interface **PCI** MCE compatible **Yes**
 Software **ComproDTV, ComproDVD 2, Ulead PhotoExplorer, Program Scheduler**
 Remote **Yes** Inputs **Aerial, 3.5mm audio, composite, S-Video, remote**

This hybrid tuner is capable of digital and analog TV. The remote didn't work in MCE, but operated at excellent distances using ComproDTV. Easily found the largest number of channels, and ComproDTV was decent enough to use. MCE compatibility is there with a little bit of fiddling, giving good value.

SCORE **8.0**
OUT OF 10



Leadtek DTV1000 T

Supplier **BCN Technology** Website www.bcntech.com.au Price **\$150** Interface **USB** MCE compatible **No**
 Software **Winfast DTV, PowerDVD6, muvee 3, Ulead VideoStudio 9, Ulead Cool 3D, DVD Movie Factory 4**
 Remote **Yes** Inputs **Aerial, S-Video, composite, remote** Outputs **BNC**

Unlike its USB brethren, Leadtek's full sized PCI card had better luck with pulling signal. The remote this time around was excellent, with good response and range. The price is amazing for what the card does, however the signal strength wasn't as good as Compro's slightly more expensive solution.

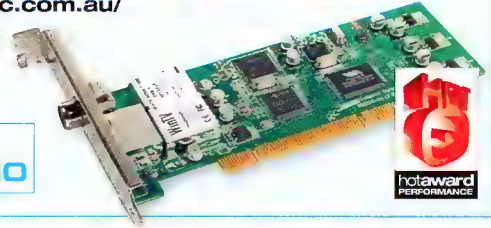
SCORE **8.0** OUT OF 10

**Hauppauge WinTV Nova-T 500 MCE I.p**

Supplier **New Magic/Multimedia Technology** Website www.newmagic.com.au/
www.mmt.com.au Price **\$250** Interface **PCI** MCE compatible **Yes**
 Software **None** Remote **No** Inputs **Aerial**

This OEM card features dual tuners, so you can record one channel while watching another. It simply plugged in and worked once drivers were installed, no fuss whatsoever. It even came with a low profile bracket. Signal strength was impressive. Buy the remote separately and you have a bargain.

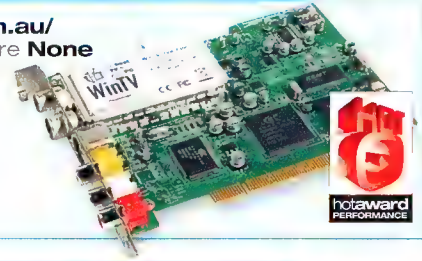
SCORE **9.0** OUT OF 10

**Hauppauge WinTV HVR 1300**

Supplier **New Magic/Multimedia Technology** Website www.newmagic.com.au/
www.mmt.com.au Price **\$245** Interface **PCI** MCE compatible **Yes** Software **None**
 Remote **No** Inputs **Aerial, FM, S-Video, composite, RCA audio**

The HVR-1300 is the second hybrid card in the round up, and apart from the extra inputs performed exactly as its lower budget cousin did, with impressive signal strength to boot. It's also OEM, so buy with some hardware. The most hassle free experience of all the tuners, and thus earns a Hot Award.

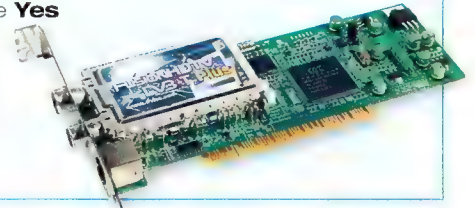
SCORE **9.0** OUT OF 10

**DViCO DVB-T Plus**

Supplier **Lako Pacific** Website www.lakopacific.com Price **\$230** Interface **PCI**
 MCE compatible **Yes** Software **FusionHDTV, Ulead Video Studio 8** Remote **Yes**
 Inputs **Aerial, S-Video, composite, RCA audio** Outputs **BNC**

After the driver hung the system during install the first four times, it finally worked, and once it did it was glorious. Easily the best reception of all the cards. The FusionHDTV player was easy to use and fully featured, although a little unstable at times. An MCE remote is included, as is a low profile bracket.

SCORE **8.0** OUT OF 10

**DViCO DVB-T Dual Digital**

Supplier **Lako Pacific** Website www.lakopacific.com Price **\$299** Interface **PCI** MCE compatible **Yes**
 Software: **FusionHDTV, Ulead Video Studio 8** Remote **Yes** Inputs **Aerial, S-Video, composite, RCA audio, remote** Outputs **USB**

Like the card above, but with an extra tuner. A USB connection enables PIP functionality. You can also plug the card into your mobo headers to start up your PC whenever you schedule a TV recording. The MCE remote is also included here. FusionHDTV is an excellent player with a good range of options.

SCORE **9.0** OUT OF 10

**Conclusion**

All cards performed decently in terms of image quality, whether using Conexant, Philips or even VIA chips – in fact it was near impossible to set them apart. Fortunately for ease of use, signal strength and value there were clear winners. As mentioned earlier, the cards for some reason were better in reception than the USB devices, and the USB boxes were better than the USB sticks.

From our experiences, it's also best to go with dual digital and MCE compatible for the best option set, and in all these respects you can't go wrong with Hauppauge or DViCO's dual tuner solutions. As such, both digital dual tuners have been awarded the Hot Award this month. Compro's DVB-T300 tuner has been around for a while, and as such its price and quality represents significant value for those who can't bridge the cost for dual tuner cards. The Leadtek

DTV1000 T isn't far behind, although lagged slightly compared to Compro's solution. HDTV will get better over time, as more stations slowly crank up to 1080i, and more bandwidth becomes available to actually broadcast at that res with good quality video.

The only thing we fear is by the time 1080p TVs become affordable and the bandwidth is available to do it justice, that the next level in technology will already be here!

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AMD FX-62 & Gigabyte GA-M59SLI-S5

AM2 screams **Craig Simms**, the ultimate conformist.

SPECIFICATION

Price **\$1700; \$TBC**
 Supplier **AMD; Gigabyte**
 Website **www.amd.com;**
www.gigabyte.com.tw
 Specifications **Processor: 2.8GHz;**
virtualisation; DDR2 support.
Motherboard: Socket AM2;
DDR2 533/667/800; 1x
IDE; 1x FDD; 6x SATA;
2x E-SATA; 10x USB;
HD audio; 2x PCI-E x16;
1x PCI-E x8; 1x PCI-E
x1; 2x PCI; 1x parallel;
1x serial; optical out; 2x
Gigabit Ethernet; heatpiped.

You'd think the AM2 launch would be all about AMD – you'd think this, but you'd be wrong. It's all about NVIDIA, and it's making sure the world knows about it with the company's new 'SLI certified' program and nForce 500 series of motherboards. Even CPU fans are able to grab themselves the 'Recommended by NVIDIA' moniker.

What this means is that NVIDIA is now able to present a complete platform under its banner by teaming up with selected partners, so you know that the hardware you're buying will perform to a minimum spec. It's also utter marketing genius, and it will be interesting to see how ATI responds – its Xpress 3200 by the way, is already compatible with AM2 – and we should be seeing those shortly. They won't be featuring the ULI chips though – ATI has had to update the southbridge itself to the SB600 thanks to the NVIDIA buyout.

We were sent a Foxconn AM2 board, based on NVIDIA's nForce 590 SLI chipset, along with a Zalman CNPS9500 AM2 cooler, and 2GB of Corsair DDR2 6400 (4-4-4-12), all which had received the big green stamp of approval.

Unfortunately, the Foxconn board we received simply didn't want Windows installed on it – thankfully Gigabyte came to the rescue, supplying their own 590 SLI board.

We were also sent the nForce 9.34 and Forceware 91.28 drivers, as well as nTune 5.00.03.06. Both Forceware and nTune have received massive upgrades, although the former, despite being pretty, is impossible to navigate unless you turn on the 'Classic' navigation panel. Looks like NVIDIA inherited some Microsoft software engineers.

The most obvious change for AM2 is the socket. 940 pins are the standard, but with a

different pinout from the previous Socket 940 so things don't get confusing. Those with Socket 939 coolers that use clips to hook on to the bracket can still use them here (although there's only one hook instead of three on each side). Those with big tower-like coolers that come with their own retention brackets are going to have to find another solution, as the holes in the board are in different places.

Also new, of course, is the support for DDR2 memory (certain spurious sources claim DDR3, although this remains to be seen), and AMD's virtualisation technology. We can't wait for some finalised software to test it out, and pit it against Intel's solution.

Gigabyte's board layout is excellent, with no real gripes except the usual lack of PCI slots if you throw in two dual slot video cards. Speaking of which, Gigabyte has now mastered the PCI-E release clip, being the best we've used.

An interesting inclusion is a PCI-E x8 slot, indicating that the market is finally starting to move on the new technology.

New from NVIDIA in the 500 series is LinkBoost, essentially guaranteed overclocking of the PCI-E bus and HyperTransport link between the northbridge and southbridge by 25% (currently this only works with 7900 GTXs); DualNet – the ability to combine both Gigabit Ethernet ports as a single entity to increase

your network throughput; FirstPacket – an attempt to prioritise outbound gaming traffic; SLI-ready memory support for EPP (Enhanced Performance Profile) enabled RAM; and support for six SATA drives all of which can be configured for straight usage, RAID 0, 1, 0+1 and 5. Unfortunately, SoundStorm hasn't returned, with the Realtek HD codec replacing AC97 for good. NVIDIA also claims to have fixed the data corruption problems with its firewall, however we didn't have time to test this properly.

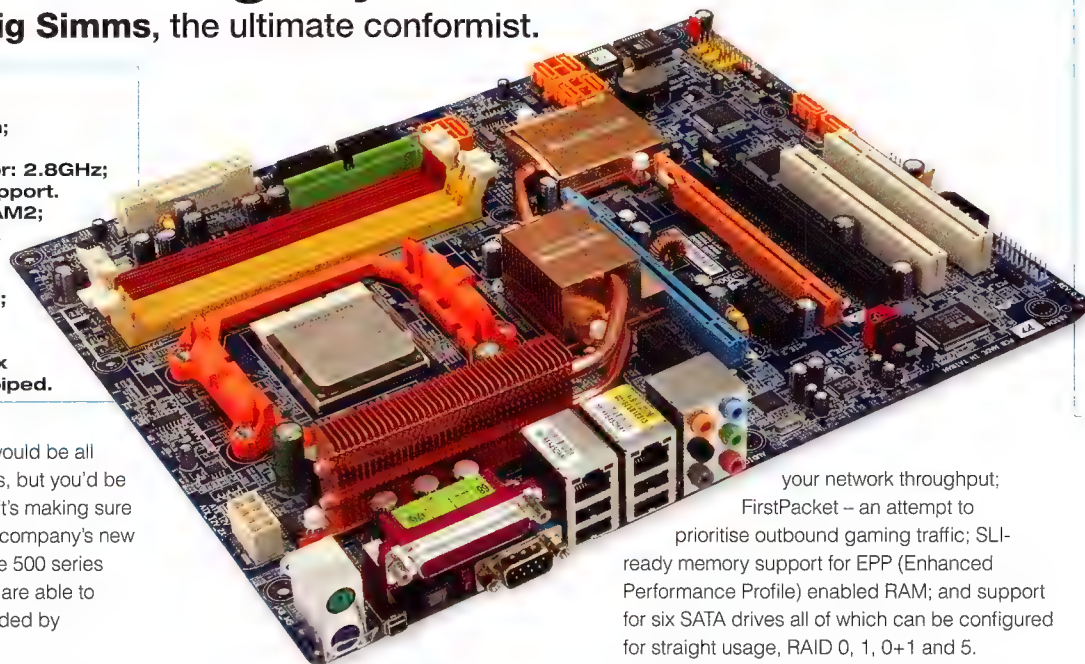
Possibly the most exciting feature for Atomicans is NVIDIA's BIOS, with enough options to make even the most devout DFI fan start quivering at the knees. You can set boot priority on all devices, not just hard drives, voltages are ridiculously tweakable, and of course it supports EPP, a new joint Corsair/NVIDIA 'standard' that allows the SPD chip on RAM to store extra settings beyond the JEDEC spec, including drive strengths and voltages to aid in overclocking.

Unfortunately, Gigabyte and other vendors have chosen to eschew the crazily configurable NVIDIA BIOS in favour of their own – the Foxconn board being the only one we've seen so far that has included it.

For testing, we used an FX-62, Corsair 6400 (4-4-4-12) and 8500 (5-5-5-12) with EPP, and for comparison our standard AMD FX-60 testbench first at standard clocks, and then at 2.79GHz by overclocking the HTT frequency to 215MHz. Both boards were fitted with a pair of 7900 GTXs.

With the relatively low latency DDR2 the FX-62 was able to strip out the overclocked FX-60, although not by much. Hopefully latencies will drop fairly rapidly, or AMD could be seeing some interesting times in the face of Intel's Conroe.

AM2 is very much a minor evolution, and not a revolution for now – but we'll see where the future takes us. To quad core and beyond!



FX-62 & 590 SLI

	FX-60	FX-60@2.79GHz	FX-62
Sandra Processor Arithmetic Dhrystone (MIPS)	18942	20306	20409
Sandra Processor Arithmetic Whetstone (MFLOPS)	16025	17182	17268
Sandra Memory Bandwidth Integer (MB/s)	5381	5777	8662
Sandra Memory Bandwidth Floating Point (MB/s)	5381	5769	8670
3DMark06 (3DMarks)	8477	8986	9058

SCORE **8.0**
OUT OF 10

Thermaltake Eureka

Bennett Ring cries 'Eureka' over the Eureka.

Price **\$349**

Supplier **Anyware**

Website **www.anyware.com.au**

Specifications **540mm x 205mm x 650mm, 12x drive bays – 5x 5.25", 2x 3.5" (front accessible) and 5 x 3.5" internal; seven expansion slots.**

In the past, Thermaltake's case designs have generally been as subtle as a sledgehammer to the bridge of the nose. Bawdy, painfully tasteless (kind of like my writing style)... yet they did the job. So it was with a sigh of relief that we slid this 'whoa momma' of a tower out of its cardboard sheath, and discovered that at least one of the designers at Thermaltake knows the meaning of the words elegant and simple.

Looking somewhat like a speaker, the external drive bays are tucked away behind a curved metal grill. It's a very plain, yet aesthetically pleasing, design. However, someone couldn't resist whacking the Eureka logo in bold white letters at the bottom of the fascia – when will these guys learn that we don't want logos splashed all over the place? Having said that, compared to the likes of the Volcano, it's definitely a step in the right emblem-free direction. A strange little problem on the front of the case is the reset button – unless you have fingers the size of toothpicks, you'll find it next to impossible to depress, although we're sure Logan has a suitably sized limb that would do the job [*Aww be nice! – Ed*].

This full tower sized behemoth cheerily doubles as a Tardis, with more than enough room on the inside for seven 3.5" drives (two external accessible), five 5.25" drives (all externally accessible) and a handful of Daleks. Considering it's whopping dimensions, at 540mm x 205mm x 650mm, the overall weight of 8.9kg is very

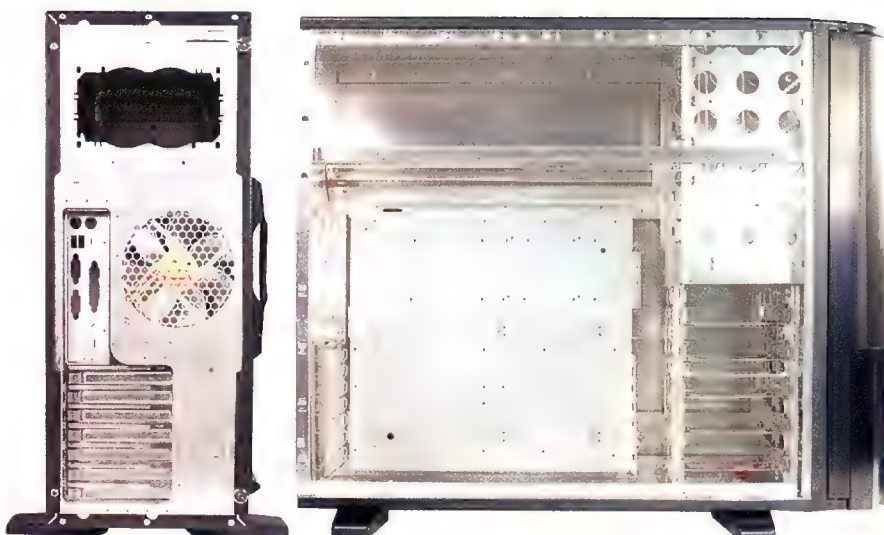
manageable, a result of it being constructed primarily of 1mm aluminium sheeting. However, a side effect of this relatively thin construction is that the case feels a little flimsy – we can only imagine how it would handle the weight if all of its drive bays were occupied.

As is becoming increasingly common, the internal hard drive cage is mounted sideways, making it simple to swap out a dodgy drive quick smart. Each of the racks in the cage are tool-less and have silicon grommets to help cut down on vibration noise, a very nice touch. Mounted just in front of the drive cage is a low-rpm 120mm fan, which should do a half decent job of keeping the drives cool, although it's a little crippled by the fascia cover. The ease of access also applies to the mobo, with a slidey motherboard tray included for when you really need to get down and dirty with the guts of your PC. The use of thumbscrews means that you can do most of the grunt work inside the case without a screwdriver in sight.

Another 120mm fan is mounted at the rear of the case, helping to keep the air moving, but

we'd recommend additional cooling if the case is filled to the brim. A large vent on the left side panel could have benefited with some kind of slim fan attached, as there's plenty of room to fit one. Those with a thirst for water will appreciate the pre-drilled pipe holes, making the fitting of an external watercooling simple. Rounding out this rather tasty package is a decent generic 430W PSU – fine for a regular system, but nowhere near meaty enough if you're going to make use of the case's server persuasion.

The Eureka shows that finally Thermaltake is starting to get it. It's not painted in any vomit-inducing colour schemes, has an elegant and efficient design, and it's feature set certainly can't be complained about. And we're sure a little bit of nail polish remover will get rid of the unsightly Eureka logo.



SCORE **8.0** OUT OF 10

Lian-Li PC-S80

Ashton Mills gets cosy with Lian-Li's new sleek and silent case.

SPECIFICATION

Price \$499
Supplier Anyware
Website www.anyware.com.au
Specifications 210mm x 590mm x 590mm; 4x 5.25" bays, 5x 3.5" bays; 3x 120mm fans, 1x 80mm fan; double layered aluminium design; rubber grommets; hard drive heat sinks; sound dampening; rear shroud.

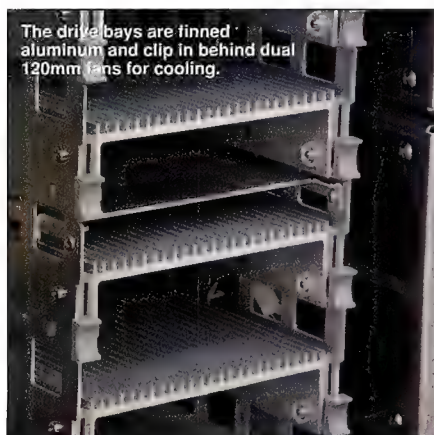
Everyone knows Lian-Li. As one of the first manufacturers to put an ounce of thought into case design, the company has garnered a huge following from geeks the world over. The company was one of the first to banish beige, integrate functional features, and make use of intelligent design – right down to the godsend that is tapered edges to prevent cut fingers! It's fair to say it set the bar for others to follow, with the Lian-Li PC-60 being one of the most popular cases of all time (and is still sold today).

However, these days quality cases abound and Lian-Li has fallen behind compared to manufacturers like CoolerMaster with its CMStacker and Antec's P180. Not to mention its 'sea shell' case was just plain odd.

But this is about to change. Its latest build, the PC-S80, is one of the most over-engineered cases we've ever seen.

Built with a solid aluminium exterior it oozes a classic sleek style. USB, FireWire and audio ports sit sunken into the top of the case, while a shroud extends from the rear. This is just one of the impressive design features – the shroud independently directs airflow out from the PSU as well as into the CPU via separate chambers (so no cross flow occurs) and, most importantly, is lined with acoustic dampening material on the inside to reduce noise. Shrouds like this have been available for a while for silent PC enthusiasts, and the PC-S80 comes with it built-in. It's removeable too, if that's not your thing.

The door is another masterpiece. Dual-layer aluminium with rubber cushions helps to absorb noise and allows it to sit comfortably against the case (no problems with warping here).



The drive bays are finned aluminium and clip in behind dual 120mm fans for cooling.

Two spring-loaded ball bearings clip the door open and shut. It's hard to explain, but the mechanism is a pleasure to use.

Inside the fascia Lian-Li has borrowed a little from Apple, with just two centered silver buttons for power and reset sunk flush in the centre of the case. The door can be key-locked, and while it's not exactly thug-proof, it's a darn sight stronger than most lockable doors.

The side panels use thumb screws and a pull-out lever mechanism to unlock (in fact, the entire case is tool-less). The left hand panel includes a padlock loop, so you can physically prevent innards being removed. Both panels have a thin mesh near the rear, which actually allows airflow into the case via the front – more on this in a moment.

Inside is just as majestic. Both sides sport a series of aluminium layers covering the 5.25" drive bays and central chamber, effectively creating a box within a box. Again, this is all to reduce noise. A strip of acoustic dampening material lines the central chamber cover above where cards and CPU fan lie. Beneath this, a height-adjustable shroud directs airflow from a rear intake vent to the CPU, powered by a 120mm fan attached with rubber grommets.

The top section houses the PSU – which sits on four shelves that are backed by rubber grommets to absorb vibration – and interestingly above this is fixed a 80mm fan, again mounted with rubber, to direct air out the rear of the case. Finally, above this, the roof of the case is lined with more acoustic dampening foam.

The 5.25" bays are nothing special, but the 3.5" bays certainly are: positioned sideways – making it easy to attach drive cables – four clippable aluminium bays with fins double as heatsinks, and sit behind two 120mm intake fans, again mounted with rubber to absorb vibrations. Unfortunately, the heatsink bays don't follow this silent philosophy, and the fit leaves no room for silicone or rubber dampers at the screws. While the clip mechanism is plastic, this will still happily conduct resonance to the cage and then the case. The 120mm fans pull air in from the front sides of the case, directed along the aluminium main chamber cover inside to the meshed vents on the case housing at the rear.



To give you an idea of the airflow design – the front two 120mm fans pull air in over the drives while a single 120mm fan pulls air in, and directs it via a shroud, over the CPU cooler. The case relies on heat rising to be expelled by a top mounted PSU and the 80mm fan above this. Finally, the rear attached silencing shroud is partitioned to direct hot air from the top of the case downwards and out, while at the same time pulling in cooler air for the CPU intake. It's all extremely nifty.

About the only complaints to make is that the motherboard tray isn't removeable, though there is plenty of room inside to work with, and the door cannot be opened more than about 130 degrees. Its picky, but we'd love an option for the door to slide back along the side as with the P180 – if you use any sort of bay bus device, like fan controllers, LCDs, or the X-Fi panel you'll have to fight with the door to access these.

Overall, the PC-S80 is a masterpiece. It successfully mixes form and function to create a beautiful, silence-focused case that's a pleasure to use. If black isn't your style, it also comes in silver with a black stripe. A Hot Award well deserved!



USB 2.0 to SATA/IDE adaptor

specs

Price **\$50**
 Supplier **Anyware**
 Website **www.anyware.com.au**
 Specifications Supports **SATA, 40-pin 3.5" IDE and 43-pin 2.5" IDE** hard drives or optical drives, **USB 2.0**, external power supply.

If your computer case is made from 14 coat-hangers, a sticky ball of cat fur and some super glue, have we got the gadget for you. Forget spending a few hundred dollars for an external hard drive case, when this ghetto SATA to USB 2.0 adaptor can do the job, with only a minimal risk of electrocution!

Okay, so the chance of frying your innards is minimal, but we're not sure how safe it is to use an internal hard drive when it doesn't have a protective case. One of the first pieces of hardware ever destroyed at *Atomic* was an internal IDE drive mounted externally on our test bench, after moving it while it was powered up. When testing this gadget, we weren't in the mood for any blue sparks, so didn't dare to move the drive while it was in operation.

The adaptor accepts SATA, 40-pin 3.5" IDE and 43-pin 2.5" IDE drives, and can even run a SATA and IDE drive at the same time (but not two IDE drives). The adaptor has an external power pack, although you could also use any leftover power connectors (molex or

SATA, whichever your drives need) from your box's innards. Simply plug in the drive to the adaptor, turn on the power and then plug the USB 2.0 cable from the drive adaptor to a spare USB 2.0 port. And voila, you now have a very cheap external hard drive! It's such a simple concept we wonder why it hasn't been done sooner.

Plugging in a spare Maxtor MaXLine III SATA150 as a test Windows detected the drive no problem, and a quick run of HDTach showed a rather brisk transfer rate of 33.4MB/s, which is more than fast enough for your data transferring needs.

This gadget is a great idea made manifest. It's a dream for doing backups to external hard drives, taking a hard drive over to a friend's place to share files, or just hooking up extra



storage when and as you need it.

We like it so much, we're using some of these in labs now. Just remember to place drives on a stable platform, and don't let them sit too long without airflow, as you can cook a drive's electronics if its sitting on a surface that doesn't let it breathe.

BR

score **8.0**
OUT OF 10

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Seagate Barracuda 7200.10 750GB

Price \$980

Supplier Seagate

Website www.seagate.com

Specifications 7200rpm, 16MB cache (8MB cache models available), 3GB/s, NCQ, perpendicular recording, five year warranty.

We're one step away from having 1TB in a single disk drive, and it scares the hell out of us. On the one hand it's incredibly cool, on the other hand losing that much data in one hit would be seriously crippling. Data security is a huge concern.

Which obviously Seagate recognises, as besides being the first perpendicular desktop drive on the market (allowing Seagate to cram in 130 gigabits of data per square inch) the 7200.10 introduces a few new features to keep your data safe – Adaptive Fly Height and Clean Sweep. The fly height is the distance between

atomic



hotaward

the head and the platter, and depending on conditions, this can now be adjusted to maintain consistency of read data. Clean Sweep is a simple premise – it passes the drive head over the platter at power up to attempt to smooth out any irregularities

along the disc. Hooking it into our test bench and making sure the SATA 1.5Gb/s jumper from the back was set to unlock it to its full potential,

we ran HDTach using 32MB long zones.

It pounds the competition with finesse, outperforming even Seagate's own 7200.9 500GB drive, scoring 254MB/s burst, and 67.2MB/s average read compared to the earlier model's 247.6 and 51.2MB/s respectively.

It still doesn't reach the average speed of 75.4MB/s achieved by WD's Raptor 1500ADFD, but running at 2800rpm slower it's doing damn fine. In fact, throw them in RAID 0 (1.5TB of unformatted joy... *swoon*) and the scores run up to 274.6 and 132.8MB/s. Holy sweetness Batman.

The price is extravagant compared to lower specced drives. However, at the time of writing you can get said drive for almost \$300 less if you're willing to do a bit of a search. 250GB drives are still the sweet point though, being



able to easily stack up three for close to two hundred dollars less than this single 750GB monster. This however doesn't make the 7200.10 any less impressive.



9.0
OUT OF 10

the playingfield

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Want a New Dell™ XPS Notebook? All you gotta do is hit the back of the net!

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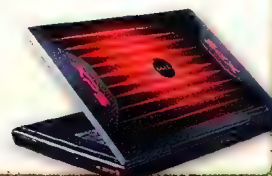
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*Terms & Conditions available online



Sytrin KuFormula VF1 Plus

Price \$TBA
Supplier Sytrin
Website www.sytrin.com
Specifications 1550/2400/3150rpm fan settings; 80/92/120mm fan capable; RAM sinks; 242g.

The KuFormula is a build-your-own VGA cooler kit, meaning it can be fitted to almost any graphics card. As a result, it comes as a bunch of parts that need assembly.

Included are a heatsink, crossflow fan, retention bracket with a three-speed switch, a fan support bracket that attaches perpendicular to the first, eight RAM sinks and a whole bunch of screws. There is also a non 'Plus' version available, which just includes the heatsink and fan frame holder – if you have an SLI or Crossfire solution, this is the path you'll have to take, and buy the upgrade kit that should be out some time in June – for now, this cooler is for single cards only. Because the fan also mounts on top of the card, you'll need at least 60mm clearance between the top of your PCI slots and your case.

The whole kit was assembled on our local X1900XT in 10 minutes. If you're not a fan of crossflow fans, you can add in an axial 80, 92 or even 120mm normal fan across the top instead.

Those with dual slot cards may need to get creative with some pliers for maximum effectiveness, as the fan speed bracket needs to sit flush with the heatsink.

Giving the card some oven lovin' in 3DMark06, the stock heatsink managed 52°C at idle and 84°C at load. The KuFormula was worrying, running idle at 74°C and simply crashing whenever running 3DMark – on closer inspection we discovered that the two screws holding the attachment arms of the heatsink in place were stopping the copper from making proper contact with the core. Fishing some screws with lower profile heads out of our infinite screw collection, we reattached the KuFormula and tried again.

Sweet success! An excellent 36°C at idle and 65°C at load with the fan set to its highest speed, which is infinitely quieter than the

stock X1900 fan at highest speed. Shame the included screws didn't do the job correctly otherwise this cooler would have scored much higher.

CS

SCORE
8.0
 OUT OF 10

Acer AL1951

Price \$899
Supplier Acer
Website www.acer.com.au
Specifications 19"; 1280 x 1024; 300cd/m² brightness; contrast ratio 700:1; viewing angle 140°(H), 130°(V); 2ms response time.

Choosing between two competing LCD monitors is often like trying to decide which of the Olson Twins most deserves to sleep with the fishes. Most have more than acceptable image quality, leaving price and pixel response time as two of the most important factors. While the price of this 19" screen isn't the most competitive, Acer's claim of a 2ms response time helps it stand out from the crowd.

The fascia is nice and slim, and it's great to see the plugs at the rear of the base, rather than tucked away in a hard to reach spot under the rear of the monitor. Calibrating the monitor wasn't difficult, as it seemed to have almost perfect brightness and contrast out of the box, as witnessed by the DisplayMate setup utility. It passed most of the DisplayMate tests with flying colours, bar one – the backlight is most definitely not even.

The top and bottom of the screen are much brighter than the central area, which can be a little distracting in darker scenes. But the

ultimate test of this monitor's prowess came in the motion tests (pwning noobs in fast moving games), such as BF2 and HL2. As expected, all ghosts have been exorcised from this monitor due to extreme response time, but then again, we don't notice ghosting in most 8ms monitors anyway. Thanks to the maximum refresh rate of 75Hz, slightly better performance when using vsync was possible when compared to a 60Hz monitor.

Considering it's possible to pick up a respectable 19" LCD monitor for around \$500 these days, the high asking price of the AL1951 makes it a hard sell, especially considering it isn't widescreen – a must for gaming in the future and movie watching. If you're convinced that you can see ghosting in other 8ms LCDs, the faster pixel response time of this monitor might be a godsend, but for the rest of us, we're better off waiting for a price drop.

BR

SCORE
7.0
 OUT OF 10



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Arctic Cooling Freezer 64 Pro

Price \$39

Supplier Cool PC

Website www.coolpc.com.au

Specifications Heatsink for Socket 939; 92mm 2200rpm ceramic bearing fan; copper base; three two-way heatpipes; aluminium fins; 528g weight.

Far from an ice machine, the Freezer 64 Pro is an upright air-cooled heatsink, with a side-fan that blows through the heat-piped aluminium fins.

This model is specifically for Socket 939, but keep your pants on; it's also available for Socket T (775) systems – known as 'Freezer 7 Pro'.

Unlike the myriad other heatsinks that require you to install a custom retention mechanism, this unit lets you use the existing retainer. This means installation is the sneeze it was intended to be.

For the fan, rather than opting for the usual screwed-on connection, Arctic Cooling has ingeniously hung it from the heatsink using soft rubber connections. Testament to this, the only audible noise is a gentle breeze passing through the unit.

Of the 42 aluminium fins, three at the base have been designed to focus a small amount

of air on the area where you'd normally find the processor's MOSFETs.

Low key being the style of this unit, it isn't equipped with a fan potentiometer, though this is hardly necessary, as it's a wonderfully stealthy ninja at full speed.

Clipped to Chernobyl (set to 80W) in an ambience of 23°C, it managed to clean up at 43°C. An efficiency rating of 20°C is far from over the top, but it isn't bad for a silent, active unit.

Given the mere reasonable performance, is it worth the asking price? Absolutely. It's no earth shattering performance pimp.

However, if you don't intend on overclocking the potentially high-end system this would call home, the Freezer will not only maintain The Chill but lower the usual racquet to a whisper. And that's how we like it.



Thermaltake Big Water 735

Price \$249

Supplier Thermaltake

Website www.thermaltake.com.au

Specifications Water cooler for Socket T/939; copper-tubed, aluminium-finned radiator; 1300-2400rpm 120mm fan; copper water block; 400L/hour flow rate.

From the almighty creators of platinium comes somewhat of a surprise. To the unsuspecting eye, this is just another ordinary CPU watercooler that's easy to set up with no messy leakages. Only you'd be wrong about one thing; it's far from ordinary. Quite simply, Big Water removes heat just as effectively as the Hulk can break shit up.

Big Water consists of all the necessary parts to get a watercooled CPU. The most tooling about consists of cutting the included pipe to the desired lengths. Then, of course, is the fun part of attaching the mobo retention mechanism. Overall, installation is a fairly easy affair.

A technically sound design, it has a copper water block for and a radiator with copper tubing and aluminium fins.

These fins are extremely dense, and we suspect that these coupled with the 400L/hour flow rate to be the main reasons it's a winner. It's time to let the numbers speak

for themselves. In an ambient room temperature of 23°C, with the fan spinning at 1300rpm, we hit 39°C on Chernobyl (running at 80W). Not too shabby, but nothing to write home about. Then we fired the fan up at its top speed of 2400rpm. It gives off a very audible whoosh at this speed; however this levelled the temperature down to 34°C. Whip out the pen and pad, as 11°C efficiency is overtly good.

It's one of the best watercooling kits we've seen, and we have seen a lot. This glorious achievement marks a major milestone for Thermaltake, as it now has a no-nonsense beast to give the top dogs a run for their money.





If your answer was E, you should consider studying for your degree at the Australian Defence Force Academy (ADFA). ADFA is a campus of the University of New South Wales located in Canberra. Here you can get a degree in Engineering, Technology, Science, Business or Arts and you'll also learn the leadership skills you'll need as an Officer in the Australian Defence Force. There are all kinds of Officer positions available from Administration and Logistics through to Aviation, Intelligence and Engineering. You could become a Marine Engineer in the Navy, a Pilot in the Army, or even an Air Defence Officer in the Air Force – there are dozens of exciting

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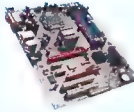
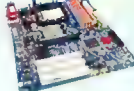
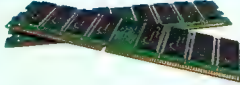
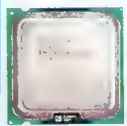
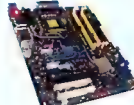
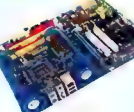
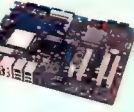
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- D. NO HECS**
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There's nothing sexier than a new kit. And whether you need to horde your pennies (Budget), want the best power for your dollar (Performance) or own a small mansion and

a collection of sports cars (Extreme), we're here to help with this handy matrix of *Atomic* recommended products. You may find your needs fall between categories – that's okay,

just mix and match to suit your budget! Each piece of kit has been reviewed hands-on in *Atomic*, so if you want to learn more look up the issue and page number listed.

	CPU's	Motherboard	Memory	Video Card
BUDGET <i>I can't afford to eat... gimme gear!</i>	 Intel Pentium 4 6xx Series PRICE \$300-970 Single core isn't dead yet, and the Intel 630 can be had for less than 300 smackaroos, satiating those on a shoestring.	 ECS RS400-A PRICE \$189 This budget board uses the Radeon Xpress 200 chipset, offering a perfect 'in between' stage for those who need to upgrade slowly.	 2x512MB PQI Turbo PC2-4200 PRICE \$140 If you can't afford the 2GB, stick with 2x512 to get your dual channel bonus.	 Sapphire X800GT0 Fireblade PRICE \$280 The Sapphire RADEON X800GT0 Fireblade is a power packed performance beastie.
	 AMD Athlon 64 Series PRICE \$260-550 If you can't afford dual core or don't see the point, the ol' faithful 3200+ still has quite a kick left in it at around \$265.	 Gigabyte GA-K8VT890-9 PRICE \$139 Sporting VIA's K8T890 chipset, this board is perfect for the budget conscious but still packs a powerful punch.	 G.Skill ZX Value DDR PRICE \$169 1GB is the bare minimum you'll get away with these days - stick these in for some decent grunt.	Reviewed in Issue 59 – Page 35
PERFORMANCE <i>Hardware that bangs the best for buck.</i>	 Intel Pentium D Series PRICE \$250-1100 Yummy goodness in an Intel wrapper. The Presler cored 920 is the best value currently at around \$400, and should be able to stretch its legs in the OC stakes.	 ASUS P5N32-SLI DELUXE PRICE \$399 It doesn't get better than NVIDIA's new SLI x16 platform and dual-heat-pipe cooling for the Pentium.	 2x1GB PQI Turbo PC2-4200 PRICE \$300 PQI understands value, fortunately for us they also understand performance.	 Albatron 7800GT Super High PRICE \$650 Still the value king, the 7800GT will keep the average user happy. This one is clocked a little higher than most, which is all good in our books.
	 AMD Athlon 64 X2 Series PRICE \$500-1050 Burning speed with an attractive price tag, the 3800+ is currently your sweet spot at around \$500, and should overclock that extra mile you require.	 ASUS A8N SLI PREMIUM PRICE \$315 This CrossFire mobo packs high quality ASUS design and affordability into one bundle.	 2x1GB PQI Turbo PC3200 PRICE \$360 The PQIs impressed with their overclocking potential and low cost.	Reviewed in Issue 60 – Page 38
EXTREME <i>Gimme power. Money is no object.</i>	 Intel Pentium 955 EE PRICE \$1700 Dual core is the future, and the future is inside this smoking chip with high overclocking potential.	 Gigabyte GA-1975X PRICE \$445 The 955EE and CrossFire have never been more at home. Plus turbojet wind tunnels!	 2x1GB Geil PC2-5300 Ultra PRICE \$510 The Geils screamed through our lab tests, proving their dominance for the Intel platform.	 X1900XT CrossFire PRICE \$950x2 If you can find a CrossFire Edition card, pair it up with a standard XT for max speed.
	 AMD Athlon 64 FX-60 PRICE \$1700 Unlocked multipliers and hot dual-core lovin' means joy. You can't go past the FX-60.	 ASUS A8R32-MVP Deluxe PRICE \$329 Back in black, ASUS rocks the house with dual PCI-E x16 slots for CrossFire.	 2x1GB OCZ PC4000 EB Platinum PRICE \$535 OCZ provides quality products for the hardcore – and this time is no different.	Reviewed in Issue 62 – Page 37

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Coolers


Thermaltake Golden Orb II

PRICE \$49

For such a large and effective heatsink the price is hard to beat. It's low profile too, so should fit in all sorts of cases.

Reviewed in Issue 58 – Page 37

System drive


Seagate Barracuda 120GB

PRICE \$120

These 120GB drives are fast and sweet, and yet the price is right at around a dollar per GB.

Reviewed in Issue 53 – Page 41

Display


BenQ FP71V+

PRICE \$599

This 5ms 17in LCD is cheap and speedy, and plenty good enough for even the most fussy of grandmas. Send her your love today!

Reviewed in Issue 54 – Page 48

Speakers


KOSS SB40

PRICE \$129

You'll find that these circumaural boomers will do you justice just fine if you can't afford a THX 7.1 platinum plated surround sound setup.

Reviewed in Issue 38 – Page 30

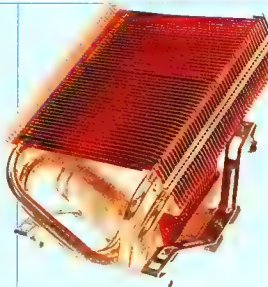
Cases


CoolerMaster Ammo 533

PRICE \$100

Perfect for LANs with its heavy duty handle, military styling and rugged construction, the Ammo blasts the budget competition away.

Reviewed in Issue 60 – Page 50


Thermalright XP-90C

PRICE \$99

Thermalright built their business around effective coolers, and the XP-90C is one of the best money can buy. It looks secks too!

Reviewed in Issue 58 – Page 33


Seagate Barracuda 7200.10 750GB

PRICE \$980

Seagate's fancy new technology makes this beast both fat and fast. We're almost at 1TB!

Reviewed in Issue 66 – Page 43


Samsung 930BF

PRICE \$750

Clocking in at 4ms, this gorgeous 19in screen has a colour depth and tonal range that will make you weep with joy.

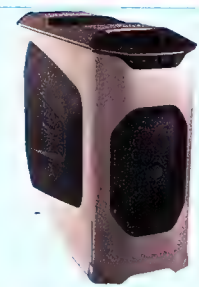
Reviewed in Issue 61 – Page 46


Altec Lansing MX5021

PRICE \$349

This 2.1 set is for those after a decent yet simple setup. The next best thing before 5.1 sound.

Reviewed in Issue 47 – Page 85


CoolerMaster Stacker 830

PRICE \$340

Like the Stacker before it, this sensational Stacker stacks sumptuous specifications selaciously.

Reviewed in Issue 61 – Page 36


Asetek VapoChill Lightspeed

PRICE \$1129

Vapour phase change. Ooooh. Vapour. Phase. Change. No matter how many times you say it, it's still cool (pun!)

Reviewed in Issue 64 – Page 38


Western Digital Raptor WD1500ADEFD

PRICE \$480x2

Dear lord. The performance king hath cometh, short of whacking in a SCSI. Buy two and RAID 'em.

Reviewed in Issue 62 – Page 40


Dell 3007 WFP

PRICE \$2899

Thirty inches. 2560x1600. 11ms G2G. If you can handle the size and cost to run this massive beauty, you won't be disappointed.

Reviewed in Issue 61 – Page 49


Logitech Z-5500D

PRICE \$699

Able to play the 'liquid gold' that is DTS 96KHz/24-bit, this 5.1 beast can wreck both home and hearing alike with equal impunity.

Reviewed in Issue 48 – Page 56


Lian-Li PC-S80

PRICE \$499

The PC-S80 must have been designed by an ear-muff wearing design dude as it not only looks sleek and cools well, but it's super quiet to boot.

Reviewed in Issue 66 – Page 41

COVERFEATURE

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PPU-AG1011

REV:1.05

PhysX™
ageia

AG1011-P A1
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AGEIA

E=mc² gets new life on your PC thanks to the world's first Physics Processing Unit, but will it revolutionise gaming? Craig Simms and Ashton Mills reveal all.

AGEIA. A company forged from the homelands of its five founders – America, Germany, Egypt, India, and once again America. It's started a revolution in an industry that definitely needed it, and before you know it 'physics processing' had become the new buzz word. Who could have seen a few years back that F=ma would suddenly be more interesting out of the classroom?

Although it only really started making noise last year, AGEIA has been around since 2002. The company has watched the industry develop around it for some time, while developing its product, and whether the world is ready for it or not, 2006 has become the year of PPU.

What started with five engineers has expanded to well over one hundred people at AGEIA, and the company is set to make physics the new battleground of hardware and gaming APIs. And it is a battleground – the advent of the PPU is the most exciting prospect we've seen since booting up GLQuake with a 3dfx Voodoo all those years ago. It's here now, it's here to stay, but just what form it takes in the long term for end users – and which hardware and which APIs will become standard – is still very much in flux. This is always the way when new technologies are born.

FUTURE FORETOLD

AGEIA's solution, inventively titled PhysX, brings with it a simple premise and many complex ramifications: to inject real time physics into gaming in a big way. From collision calculations to the dynamics of rigid bodies,

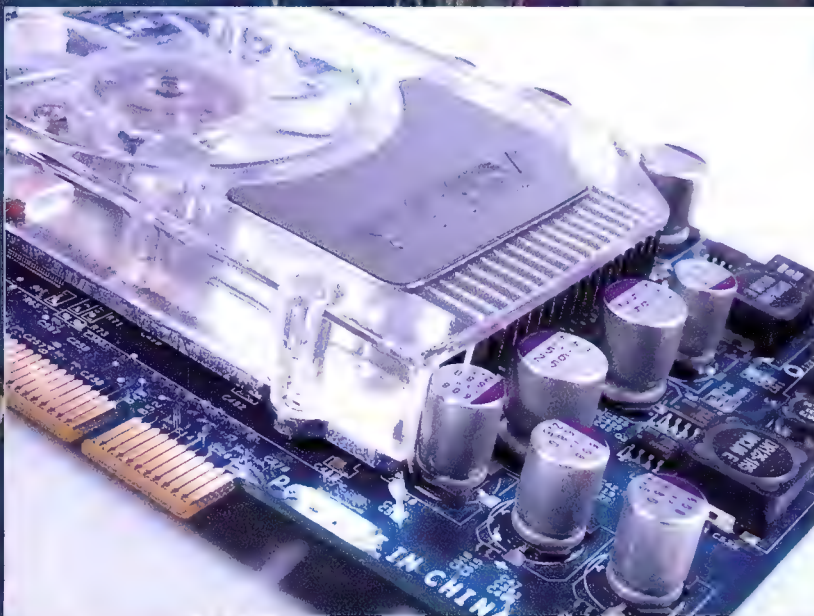
particles, fabrics, and fluids (and presumably all states in-between), the PhysX card aims to elevate gaming to a much more complex state. To the layman this means solid objects, sparks, smoke and rain, cloth and water can now move and act more impressively and realistically than ever before, and in greater volumes.

Conceivably, PhysX can even be used to determine how light falls on a scene, unloading all the tough calculations from the GPU and CPU so it can render the best looking scene possible.

It's not just the gamer who can benefit from a dedicated PPU either: PhysX plug-ins are available for professional 3D tools such as 3ds max and Maya, third party SDKs like Unreal Engine 3.0 and Gamebryo, and there's even speculation some MMOGs will be able to use the cards to handle visibility and collision detection at the server level – AGEIA says that up to 50% of CPU cycles are spent calculating this, and clearly any help the servers can get is a blessing (if it allows greater loads on WoW servers and cuts down the queues, bring it on!)

INSIDE THE PPU

The PhysX PPU is based on a 130nm process, contains 125 million transistors (about half as many as an FX-60) and several dedicated cores. Quite how these cores work is something AGEIA is refusing to talk about. Though rumors abounded about both 256MB and 128MB versions of the cards being available, this is actually incorrect. The first incarnation of the



ASUS AGEIA PHYSX SPECS

Price	\$499
Transistors	125 million
Process	130nm
Bus	32-bit PCI
Power	Molex connector
Memory interface	128-bit
Memory speed	733MHz GDDR3
Memory capacity	128MB
Internal memory bandwidth	Two terabits/s
Peak instruction bandwidth	20 billion instructions/s
Sphere-sphere collisions/sec (max)	530 million
Convex-convex (complex) collisions/sec (max)	533,000
Rigid body objects (max)	32,000
Particles (max)	40,000-50,000

Press SPACEBAR to throw a sphere.

Use mouse and arrow keys to change view.
Press ESC to exit.

Press SPACEBAR to throw a sphere.

Use mouse and arrow keys to change view.
Press ESC to exit.

Press SPACEBAR to throw a sphere.

Use mouse and arrow keys to change view.
Press ESC to exit.

The demo built into the driver shows off, albeit simplistically, the rapid and smooth calculation of many different particles moving along their own trajectories.

AGEIA card is only a 128MB beast utilising GDDR3 running at 733MHz, and claims to support an internal memory bandwidth of 2.1 tera(b)its per second on a 128-bit bus.

At the concept level, it's easy enough to understand what the card provides: say in a game that two boxes are thrown at each other, then collide and bounce off. For every timeframe, the PhysX card calculates the dynamics of the boxes (trajectories, rotations, positions) and any collisions in the scene (when the boxes hit each other), and sends that information to the CPU to incorporate into the game logic. If objects have been moved by the game logic rather than by physics (say an enemy walks off to the screen), that information is sent to the card by the CPU, so it may be included in calculations. The final result is then rendered on screen by the GPU.

At the hardware level, it's understandably a little more difficult to explain. Not so much due to technical mumbo jumbo, but simply because AGEIA is guarding its secrets tighter than the gravitational pull of a black hole. And this isn't without good reason: aside from the startup company wanting to ensure success from its years of work in what is going to be a brand-spanking new market, the fact is that AGEIA's PhysX isn't the only accelerated physics solution. The company already has competition.

To deflect this, AGEIA is keen to point out why its PPU is better than other solutions. Multi-core CPUs are poised over as being the generic solution to handle the speed of physics routines with any power, and according to its

press release, GPUs and their independent parallel processing model[s] are not well suited for the demands of interdependent physics action. And GPU solutions – which both NVIDIA and ATI are starting to hype – are explained as not being appropriate because the use of read-only shaders doesn't cater to the read-write nature of interactive physics, and that despite large numbers of pipelines GPUs simply can't scale to the requirements of a complex physics system.

And of course, the company is going to say this. While we don't doubt the PhysX card has some pretty spiffy wizardry going on inside, we can't see why the second core on a dual-core system couldn't be properly used to do some serious physics processing in lieu of and in place of a PPU. And in fact, this is one of the tests we aimed to resolve in the writing of this feature.

For the card to be a success, AGEIA needs to demonstrate its benefits beyond a shadow of a doubt. The two most important questions the gaming world is asking right now are just what difference it can actually make, and is it worth it to buy one?

The problem, however, is that to answer these questions fairly we really need a killer game that shows off what a PPU can do, and also demonstrates that the PPU is necessary to achieve this. But there isn't one. The situation of PhysX-supported software at the time of writing, at least of mainstream gamer nature, consists of the Collection demo, a series of patches for games such as Ghost Recon Advanced Warfighter and Rise of Legends, and the upcoming

ASUS' PhysX card. Also available is a model from BFG that features a larger fan and, interestingly, a slightly different board layout.





Anatomy of an explosion. Everything happily bounces off each other and flies around to create major havoc. Unfortunately it seems most of the objects are of equal weight, so sometimes just getting your toe stuck under a small crate can kill you. Here's hoping the final release is better.

UT2007. But it's worth noting that only CellFactor actually makes heavy use of the card; the other titles benefit so marginally you're not missing anything if you don't have a PhysX card. And as we'll demonstrate, even CellFactor's impressive graphics and game play aren't as tied to the PhysX card as the marketing hype would have you believe.

While it would be denied, we think that AGEIA's hand was actually forced on the release of PhysX by NVIDIA's announcement it was pairing up with Havok to introduce physics processing on the second card of an SLI setup. When a company as big as NVIDIA says its coming over to your house to play, and bringing its own toys, it can't be ignored.

PhysX is a great technology, there's no doubt, but it's literally crazy to release a new product to market that requires new software to take advantage of it while the new software isn't ready to ship. There are no real indications for the PhysX card right now, so exactly what is the incentive to buy one?

FIRST PRINCIPLES

If you're an early adopter, or just love tech, you've probably already got one on your Christmas list. Despite the dearth of impressive applications, you can still put the card to work.

From our own perspective, CellFactor is a blast. Providing the cards take off in a big way, the death match potential alone for CellFactor could be quite a big draw, being the first game in which a accelerated physics truly alters and dictates the gameplay and not just impressive effects. Beton Soldier and Ghost Recon Advanced Warfighter (GRAV) are at this stage just token efforts – and in the beginning this is most likely all you'll see, as developers do nothing more than dip their toes in the water until the PhysX becomes a mainstream accepted product.

Sadly, this means that the card is being mostly used for *additional effects*, rather than taking any load off CPU or GPU – so we can expect games at best to run slightly slower with the physics card than without as the other components now have to deal with the added complexity introduced by the PhysX card. Obviously, this will improve over time, providing the uptake is big enough.

Of course, this is the whole problem – as with any new tech, it's very chicken and egg – the card is there, but the software support isn't. However, without the card being there, obviously there'd be no software, or at the most you'd get enabled software that wouldn't have the hardware. Clearly AGEIA has to take the risk here, and as a result needs to ensure

the painful birth that is the entrance of a new product into the industry.

It's fair to say at this point that people expect the card to hit its second generation before adoption rates take off, assuming AGEIA doesn't get over-ridden or bought out by ATI, NVIDIA, AMD or Intel while it tries to get its own piece of the pie.

Which leads us to the competition. Intel has hinted that multiple core CPUs don't necessarily have to be identical cores, which suggests it's possible to dedicate certain functions to an entire core – perhaps the rebirth of the math co-processor, but on die?

NVIDIA has, of course, teamed up with AGEIA's rival Havok to provide physics on its graphics cards, providing you have an SLI solution. This will unfortunately knock out your second card, using it for physics instead of graphics. Given this, most people we're sure would rather buy the

cheaper dedicated AGEIA card than shelling out a grand for a top end video card that won't be used for video.

Tantalizingly, Havok's solution (called Havok FX) is quoted as simply needing Pixel Shader 3.0 to achieve what it does, so it may turn out that ATI hardware also supports it just fine. It hasn't stopped them either, countering AGEIA's PS3 deal with a Nintendo Wii sign-up. No doubt Havok will get support onto the other major consoles soon.

ATI's strategy seems to be a little more interesting – rather than dedicating itself purely to physics, it is opening up its spec to the General Purpose GPU (GPGPU) crowd, and providing the software to get into the guts of its cards. They hope that the glut of pixel processors on the X1900 series will be

of benefit *outside* of games, for such applications as Folding@Home or even database queries. The benefit here is that in a Crossfire solution you shouldn't have to lose a whole card to physics – not to mention the 96 pixel processors available in X1900XT Crossfire should help things along nicely, compared to NVIDIA's maximum of 48 in SLI.

Then there's the final player in the arena, Microsoft. Let's face it, it proved it with DirectX, and once again it's very likely it'll step in with its own API that makes everyone in the physics market behave. Until that point, expect plenty of competing standards.

PUTTING IT TO THE TEST

Now to the juice – Atomic got the first PhysX cards in the country shipped in for this feature. As you can see from the images, the PhysX card looks

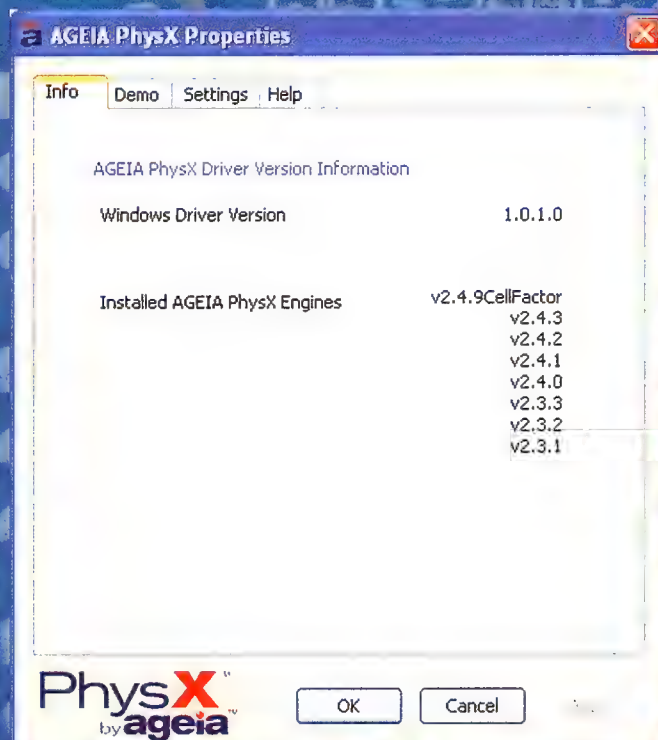
There are no
real applications
for the PhysX
card right now,
so exactly what
is the incentive to
buy one?



Blowing stuff up never gets old. Especially when it blows up even more blower... upperer. Yeah.

pretty much like high end graphics cards did six years ago, without outputs on the backplane and a slightly bigger heatsink. And yes, it needs a dedicated mole.

Installation is simple – just whack it into an available PCI slot (those with dual graphics cards and an X-Fi may find themselves a little cramped), and then hook up the power. If you don't plug in the power connector, unlike graphics cards it doesn't complain – Windows just refuses to acknowledge it



The driver panel is pretty basic, with no options to speak of.

exists. Why did AGEIA go the PCI route instead of PCIe? Simply because PCIe is ubiquitous. The company may look at doing a PCIe version when it feels the market is ready.

Drivers for the card operate a little differently to what you'd expect – the driver seems to simply let Windows know what the AGEIA card is, and that's it. You can then install engines – different revisions of the physics core that the card can use, determined by the application running. We assume that there is so games can be associated with a certain engine, the advantage being that if the physics are altered in a future engine, the original game still runs as expected. As an aside, for some reason the driver control panel has a button to reset the PhysX card, as well as a button to diagnose all the chips to make sure everything's working just fine – why these would be needed we're not quite sure. Perhaps at this early stage AGEIA simply wants to give customers all the tools for peace of mind, making sure their brand new hardware is working as expected.

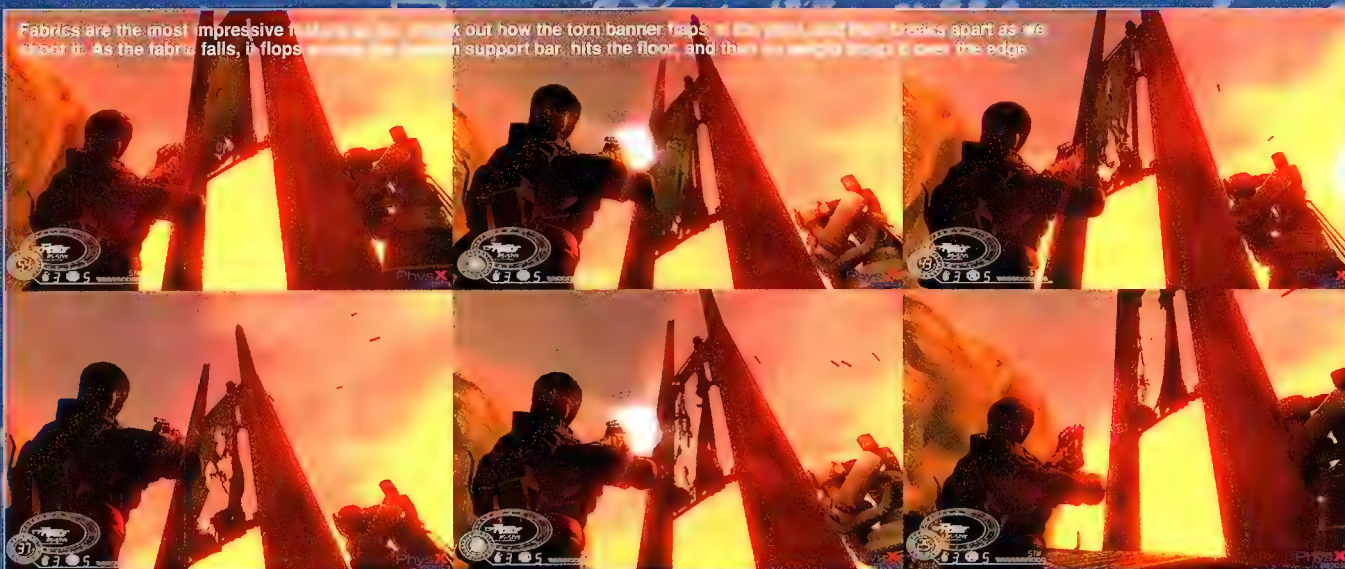
Of course adding extra hardware always means adding an extra layer of troubleshooting – with a real level of possible driver conflicts entering the fray. Crossfire, for example, simply refused to work for some reason in every PhysX game but GRAW. No doubt these issues will be cleared up once the PhysX card is on the market.

A small demo is included with the driver in which the user can fire a ball from any direction at a wall built with cubes. They fly apart and collapse in an impressively realistic representation of physics in action, but it's nothing your CPU couldn't emulate.

On an ASUS A8R32-MVP with an Athlon FX-60 and an X1900XT using the 2.4.3b AGEIA drivers, the boxes demo ran at an average of 137.187fps, according to FRAPS. Taking the PhysX card out of the equation and running in software mode resulted in a 126.918fps – to be expected, given its the simple nature of the demo.

Hopefully by the time we see retail kit on the shelves in Australia some more impressive demos will ship with the card, not to mention include an option to force software mode so the end user can see the benefits immediately, without having to remove the card. As we had a number of PhysX cards on hand (one, even two, of anything is never enough!) we simply had to plug in a second one 'just coz'. Naturally, only one card is used by software, but hey it looked sweet in the testbench.

Fabrics are the most impressive in the game. Check out how the torn banner tears at the point where it's attached to the support bar, hits the floor, and then it's pulled back over the edge.



THE GAMES

Of course, what is going to make or break the PhysX is games support. Developers are certainly getting on board in a reasonably impressive manner, although actual support is still taken at this stage.

There are three games available, with two more likely to be available by the time you read this.

CELLFACTOR

Regardless about it, CellFactor is a gorgeous game, and looks amazing at 1920 x 1200 on our Dell 2405. HDR, shadows and texture detail set to full on both our NVIDIA (ASUS A8N32 SLI Deluxe, 7900 GTX in SLI) and ATI (ASUS A8R32-MVP and a single X1900XT – Crossfire crashes) FX-60 setups. Mind you, while playable it was well below desirable framerates: the single ATI card pulling 21.79fps, the NVIDIA getting 23.90 and SLI pulling 29.93 with motion blur off. Despite this, gameplay was still quite smooth. Dropping to 1280 x 1024 added around 10fps to both setups.

Whenever a mass physics event occurred like a gravity bomb exploding

once it had drawn several objects towards it, there was a small but observable slow down. In fact, the whole effect was like a sneeze – a brief stutter or pause, and then a massive explosion of crap flying everywhere. Where the bottleneck resides is difficult to say.

If you like blowing things up the game is a veritable paradise, as all objects respawn after a short time so you can again blow them to smithereens.

We noticed that despite the range of object sizes, they all appear to have the same weight. A gigantic metal casing thing moves with the same force as a small box. The exceptions are carrier containers and vehicles which are harder to move – unless you pick up the PSI booster, enhancing your inherent abilities and allowing you to pick up, push or pull pretty much anything. Oh, and fly. And this is what is really exciting about PhysX – the different types of gameplay it can enable. In CellFactor, you can wield a giant container as a shield, or throw a vehicle at someone to frag them. With all the physics available, the game definitely wins the category for allowing the most inventive ways to become the pwnwer. While the rigid body interaction only really impresses during large scale manipulation, the fluid

Unreal Tournament 2007 will be one of the first games to make better use of the PhysX card. Still, just to what extent it will be used remains to be seen.



Switch to Atomic Madness with physics, 3D and a rotatable view.



acceleration is what gets us going – see the video on the Atomic website for an idea of how wonderful this is (www.atomicmpc.com.au/article.asp?CID=37715).

Liquid physics unfortunately doesn't appear to be as advanced, although this may simply be down to the developers not using the effect properly.

One thing you begin to notice very quickly is what we have dubbed the console effect – consoles typically remove debris, dead bodies and other such meshes very quickly to save on memory and resources – PhysX enabled titles tend to use the same effect, as the debris or liquid generated fades away into nothingness quickly, rather than staying behind as it should. Despite the frag test, as a tech demo for physics, CellFactor is a bit of a disappointment, except for the fabrics. While bodies get thrown around realistically, it's no more exciting than what we saw in Half-Life 2, just on a slightly bigger scale. It also feels a little half-baked – when objects explode, for example, a lot of random debris is generated on the spot rather than

the object tearing apart as they should – they do have a very basic 'breaking' method in the mesh, but overall it's underused.

Of course this is most likely expecting too much of the hardware and developers at this early stage to have truly destructible environments, but for some reason it still feels as if we've been slightly cheated. As a game concept though, CellFactor works brilliantly. Firing up multiple test benches with multiple PhysX cards, we can tell you that multiplayer is a ho-ho. Fabric and liquid effects are handled client side, probably to save resources (and/or developer sanity) – if one player shoots up a banner on their screen, the damage only appears to other players if they're looking at it at the time, otherwise *their* banner on screen remains intact.

Now to the niggling bit – it's possible to launch CellFactor without PhysX support through a command line option (normally the game refuses to run). Without PhysX support even and liquid effects are gone, but the impressive and expansive explosions, including debris generation, work



The top is the explosion using the Havok engine. The bottom with PhysX. Hardware acceleration adds more debris to the explosion, more smoke and more dust pits that fly out and hit the ground, and finally racing sparks when you shoot metal.

just the same. And, it appeared, almost as fast. Was the PhysX card *really* necessary to achieve these effects?

Running at 1280 x 1024 on the NVIDIA system with affinity set to both cores, CellFactor pulled 30.32fps, dropping to 30.161 with only one core active. Without the card, the game runs 30.66fps and 27.806 respectively. Oddly, the minimum frame rate never dropped below 11fps despite significant punishment.

So, the AGEIA card gives us 10fps maximum over an FX-60, fabrics and liquids. But as we suspected, the physics calculations themselves ran just fine with the CPU doing the duties.

Clearly, using a dedicated PPU has its benefits for speed and (as when it comes to cloth and liquid) specific complex effects. But is this worth the asking price of \$499?

The thing is, as we discussed in the introduction, it probably won't be for an absolute killer game that didn't just take advantage of it for effects, but made full use of it for gameplay. CellFactor is the closest AGEIA has for this, and while it's a fun deathmatch game, it's not enough.

With rumours that Microsoft will be providing a physics API, and Havok working with NVIDIA, AGEIA may be serving simply as a catalyst.

SWITCH BALL

Marble Madness with puzzle-solving elements is what Switch Ball is, and as a result was sweet to play. Unfortunately, we couldn't pull any framerates from it, as FRAPS was determined that it was running permanently at 25fps. There was no noticeable advantage in the slower gameplay that the PhysX card gave it, although when we reached a part in the level that required water simulation, we were greeted with a warning dialogue telling us we couldn't play past that point of the level unless we had said card. The full game doesn't require PhysX, with only four bonus levels included that make it mandatory. This seems to be the industry's favoured way of introducing the card, short of adding non-gameplay affecting effects, as Unreal Tournament 2007 will be doing exactly the same thing.

GHOST RECON ADVANCED WARFIGHTER

The first AAA title to hit the shelves with AGEIA acceleration, Ghost Recon is a local beast, in that it uses the Havok engine for software physics, and the PhysX for hardware. So in other words – a licensed, paid for engine for the masses and a free engine that requires hardware for the very few. This shows that while developers and publishers have embraced AGEIA, they're still being very careful about the introduction of supported games to the public.

The AGEIA card is detected by the game at runtime, and if found the PhysX engine is turned on – although nothing actually notifies the user that this is the case. It's all done with no announcement whatsoever. Perhaps a little checkbox, as we've had for years for hardware accelerated sound, would be a nice option. It would certainly pique curiosity in those who don't have the AGEIA card and are wondering what the magic checkbox would enable. Once again, what the card brings to the game is debatable. Some

extra, and only generated debris flies from explosions. Smoke is enhanced nicely, as bits of dust fly out, hit the ground and expand into more minor dust clouds. Extra sparks fly off in a realistic arc when bullets hit metal. Nice additions, but nothing that makes you want to get the card as a must-have. Could the use of completely different physics engines in hardware and software, means any benchmarks should be taken with a grain of salt. Nonetheless, we FRAPS'd the first level in both modes on the ATI test bench, the Havok engine pulling 41.6fps and the PhysX trailing at 40.18, with ever so slightly lower minimum and maximums as well. As previously mentioned, this is most likely due to the system having to deal with an additional effect rather than any load being taken off existing components.

The future

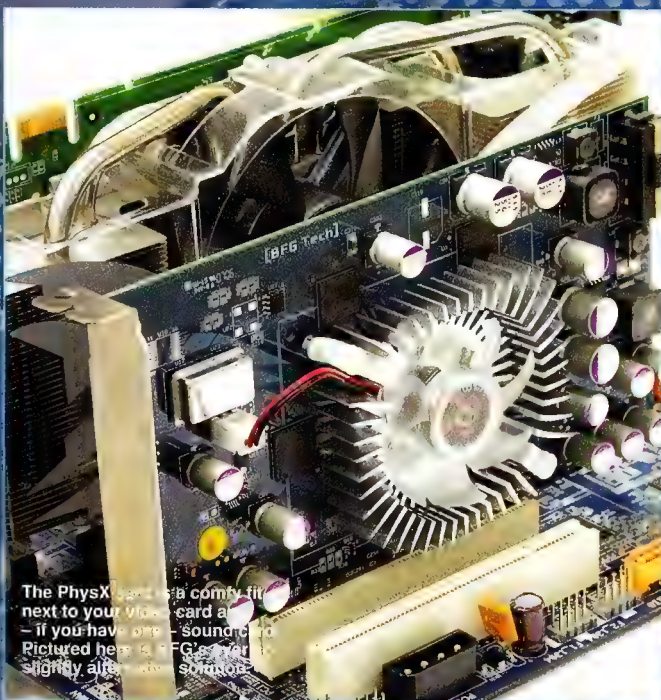
We've said it before, but for the first few PhysX-enabled titles, expect the difference to be just snazzy visual effects more than anything else. And it will probably remain that way until developers wrap their heads around the technology and feel that the general populace have accepted it as a necessary piece of hardware. We expect Unreal Tournament 2007 will be the make or break time for the technology. Despite the attention it's garnered, it's not necessarily a sure-fire winner for AGEIA, remember, the Unreal Engine Started on 3dfx's Glide API, and look where that is today!

While AGEIA has got the ball rolling, it can't keep it in its court for long. It's early days yet, but with rumours that Microsoft will be providing a physics API, and Havok working with NVIDIA, AGEIA may be serving simply as a catalyst and then be handily forgotten. 3dfx style as the rest of the industry moves forward.

We hope it doesn't come to this, but even if it does, consumers are ultimately the winner – physics processing, and the use of it in games, is here to stay and whichever vendor can deliver the best solution, at an affordable price, will have a new and profitable market under its belt.

For our part, when PPUs can see our level 60 mage emerging from a relaxing swim, rising from the ocean with the wet robe clinging to the body, extremities of the fabric flapping in the wind, slowly dripping dry to the ground while a flowing long mane tussles with the breeze, then we'll be impressed. Probably overly so.

The good news is this – it is, to be sure, only a matter of time.



The PhysX card is a comfy fit next to your video card and – if you have one – sounding. Pictured here is a BFG's for a slightly altered version.

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TECHNIQUE

HANDS-ON TUTORIALS, TIPS, AND TWEAKING
FOR THE TECHNICALLY INCLINED.

this month

TECHNIQUE CONTENTS



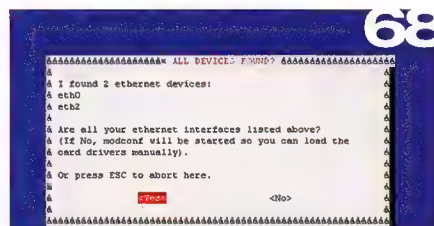
▲ Patch

Like bits through a hard drive, these are the files of your lives.



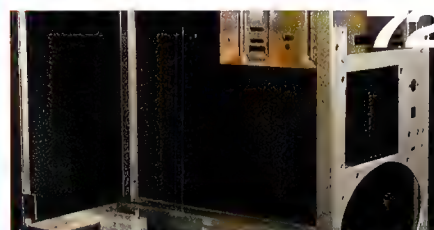
▲ Windows

You carry your USB drive wherever you go. Why not carry your apps as well?



▲ Linux

Part two of three million, nine hundred and forty four of the Uber Linux Box project.



▲ Hardware

Like George Lucas, Ron Prouse can go back and change his art whenever he wants.



▲ Hotbox

More blue lights of bright death, in a case. Seriously, how do you sleep with that thing on?

DO YOU NEED HELP?

Stuck? Always wished you could achieve something but didn't know how? Wish you had a handy guide just sitting there to dig you out of a hole? Need new jeans?

We can help on all but the last. If you have an idea for our monthly tutes, why not drop Craig a line on csimms@atomicmpc.com.au. Or alternatively you could just write to him, if you're not the line-dropping type.



will help them understand the easiest way possible. The net effect of which makes me look like I'm a little bit slow, as I stand there blank faced, like someone trying to take in the concept of half spin particles.

'Do you mean an MP3 player?'

'Is that the thing that plays music?'

'...Yes. Yes it is.'

Apple's marketing had reached even her. Utterly astounding.

Yet as much as it's great to finally have acceptance of what we've known for years - that tech is cool - somehow it feels a little cheap. Did these people start playing with a Commodore 64 in their parents' house, punching out lines of BASIC to write little text games? Do they know what a Microbee is? Did they play Pitfall? Robotron? Get picked on in school for being a nerd? Build their own PCs? Get the rush from the original Doom? Do they know 'All Your Base'? Penny Arcade? Leroy Jenkins?

Nope, all because it was handed to them on a plate as the 'in thing'. Faux nerds. Wolves in geek's clothing.

Clearly that's why the Internet was invented - so we can retreat into our own worlds of infinite geekdom and separate ourselves from society like before (and so there would be somewhere for all those YTMND sub-domains). Sure, we may be elitist loners at times - but it's a heritage that's hard to kick.

Craig needs more sleep, and less Oblivion.

csimms@atomicmpc.com.au

The world is going portable. Laptops are outselling desktops. Mobile phones were an explosion in themselves, once a sign of yuppie wankerism, now universal. Phones became camera phones, then people realised that decent res digital cameras were pretty darn small these days too.

Thanks to the iPod, music is once again mobile in a big way, the biggest since the original Walkman hit the streets.

PDA's, Blackberrys dominate the business world, and ordinary people have started carrying USB flash drives every day.

In fact, the world is considerably more tech savvy now than it ever has been, thanks to these tiny, easy to use gizmos.

In a way it's nice that everyone else has finally cottoned on that tech is good, and so is the associated geekiness that comes with it - in fact, geek has become chic. The world has warmed to us like an overclocked CPU.

Ten years ago had you asked, most people wouldn't have known what an MP3 was, let alone known that it was associated with computers. Now it's well and truly in the consumer space, to the level that my grandmother asked me recently if I have an MP3.

Now, when talking to a non-tech oriented person, and a question pops up that doesn't make any sense, my brain usually freezes for at least three seconds. In the next two seconds, all possible permutations and meanings of what they just said are thrown around, substituting some words for others, and doing some basic guesswork based on what I know of the person before I embark on the usual epic response crafted in a way that



tinytweaks

Sync or Swim

Sometimes you just gotta keep an exact replica of your data somewhere offsite – a mirrored local drive just isn't good or safe enough. We don't know, maybe you run a successful website and need to mirror it across several boxes, and you're unco with writing scripts in nix so you're running IIS and obviously, Windows. In which case, you may want to try Cobian Backup, at www.educ.umu.se/~cobian/index.htm, which happily syncs files both over the network and via FTP. Best of all, it's completely free.



Cutting Fan Holes With Hole Saws



Although we talk about 120, 92 and 80mm fans, that is a notional outside dimension which is not the size of the hole that you want in your case. If you cut those exact sizes you will find that the outer edge of the fan – the square ridge – will be visible from the outside once the fan is bolted into place. When using hole saws, the optimal sizes that work are: 115, 88 and 77mm respectively. Now, not every hole saw manufacturer will have those exact sizes in their range, so the only option is to get one slightly smaller than you need. As an example Blu-Mol, a quality brand manufactured in US by Greenfield (we use 'em!), manufacture 114, 86, 76 and mm increments, which are perfect as they allow a small margin for final de-burring and sanding. A PDF of their full product range is available here: www.kennametalipg.com/br_blumol0.shtml.

Put the boot in

While there are various boot loaders for Linux, there's a good chance you're using GRUB, and a good chance that you're not getting the most out of it. While boot loaders like LILO let you specify some kernel options at boot, the entire GRUB setup can be rewritten on-the-fly. Hit 'c' from the GRUB menu to drop to the command line, where you can specify almost any option that's valid in a GRUB configuration file. You can even load a config file using the 'configfile' command, which can be very handy when handling multiple Linux installs on one system.



MODLIGHT US Intervention 0.1 BF2 mod usi.jarhedz.com

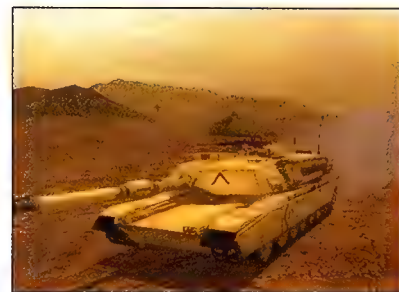


We can safely say that EA's attempt to charge \$10 per BF2 "booster pack" has been a total and utter failure in Australia. We're sure it raked in more than enough cash to pay its five creators a hundred times over, but if you were unlucky enough to buy Euro Forces you'll know that it's impossible to find an Aussie server running it. Which is a shame, as the three new maps really are quite special, but it appears us Aussies are a bunch of tightwads who don't want to shell out the cost of two Big Mac meal deals for new BF2 content.

Luckily, the first of the big name BF2 mods are rolling out across the Web, and the fact they're free should hopefully inspire more of the BF2 community to get their game on.

The first of these is US Intervention, which takes the current-day BF2 engine back to the slaughterhouse that was the 91 Gulf War. With nine new maps, over 20 new vehicles (Apaches, Hinds, Geckos and more) and a multitude of tweaked weapons, this mod harks back to the glory days of Desert Conflict. Many of the maps are wide open dune-fests, perfect for the increased amount of heavy armour which populates them. Tank battles play a key role in the mod, with infantry taking a lesser place, and the inclusion of different types of tank ammo, faster tanks and a zoom on the main cannon makes for a tanker's wet dream.

Overall, the quality of the mod is high, and well worth a download, but it's not without a couple of issues. Some of the maps seem a little too bright, lacking the detailed shadowing we've seen in BF2, and frame rate issues hit a couple of maps. These minor quibbles don't stop it from being worthy of a download though, especially once you discover that the support class is armed with a shoulder-mounted, heat-seeking SAM. Take that, chopper whores!



patch of the month updates that matter**Hitman: Blood Money 1.1**

It hasn't been out long and already there's a great patch out for Eidos' Hitman. The patch fixes mostly crashing issues related to load and saving as well as level transitions, along with a few performance tweaks for certain configurations. Additionally, users with graphics cards in SLI can turn on Managed Vertex Buffer support by typing 'enableSLI' into HitmanBloodMoney.ini. This should increase the performance of the game. If it doesn't, well, try the voodoo.

**powertools****FirstStop WebSearch**

www.firststopwebsearch.com

If you'd rather deal with an application than a web page for searching the Internet, firststopwebsearch may be for you. Including a huge amount of engines, it should help you find what you need fast. Or you could just use www.killerinfo.com.

**Vim 7**

If you've never used Vim to edit text files, version 7 may just change your mind, with new features including spell checking, tabs, undo branches and code completion.

**eMachineShop**

Looking for free, intuitive CAD software for that next casemod? Then the place you need is the eMachineShop, www.emachineshop.com. With online access to a simple quick start AV guide, the program can also import the universal DXF file format. The 3D view is a great little tool for looking at the final possibilities, too.

**antisearch** things you should never type into Google Image Search

Unlike what the name suggests, this unfortunately won't bring up Norsk versions of our favourite Red Dwarf. Those sensitive to nudity and not so pretty bodily angles should avoid with great haste.



'Norwegian Rimmer'

quote of the month learn from the masters

'UNIX is basically a simple operating system, but you have to be a genius to understand the simplicity.'
-Dennis Ritchie

distrowatch where it's at in the world of Tux

Distribution	Stable	Beta	Website
Ubuntu	5.10	6.06	www.ubuntulinux.org
Debian	3.1r2	sid	www.debian.org
SuSE	10.1	10.2pre	www.opensuse.org
Fedora Core	5.0	core-dev	fedora.redhat.com
Mandriva	2006	cooker	www.new.mandriva.com
Gentoo	2006.0	2006.1	www.gentoo.org
Knoppix	5.0	5.01	www.knoppix.com

SITES OF THE MONTH

www.betanews.com

A subsection of Fileforum, Betanews is an awesome site that will keep you apprised of most of the new software releases for the world's most popular operating system. It's also a huge file mirror, so you can usually guarantee you'll get things fast, just as it should be.



linuxdevices.com

Read all about Linux on small and embedded devices, from PDAs and Mini-ITX boards through to phones, routers, and even automated ice cream makers.



www.mastera-mebeli.ru/servs-modding.htm

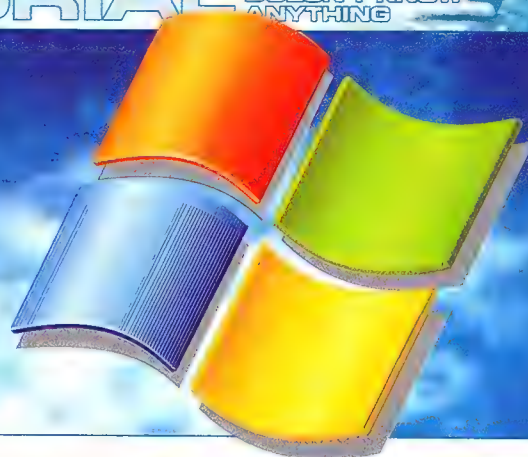
Yes, it's in Russian, but that just makes it cooler. The site of this modder shows off some spectacular wooden case mods. If you're looking for inspiration, or to work with more natural materials, you'll see what can be done in the wonderful world of wood. Craftsmanship never goes out of style!





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DOESN'T KNOW
ANYTHING



Port and portability

Craig Simms travels light

You know how it is – you're at uni, work, or even a friend's house and you can't get your hands on the application you need because it's at home. Well you don't have to be crippled – that's why the good Lord invented USB sticks.

Thumbdrives, flash drives, memory sticks, Bruce – no matter what you call them, they're handy bits of equipment. Starting off as mostly useless 16MB keys, these days 256MB is considered base level, with such brands as Corsair and Apacer offering up to 4GB sticks. You could feasibly install Windows and office from one of those things, thanks to their bootable nature – or you could even fit a DVD on there if need be.

To that end, let's get you and some choice applications portable. We'll be working off the assumption that you have an everyday 512MB stick, rather than the more exotic. Who knows, you might even be able to get that IM client running that you previously couldn't... and let's face it, it's always nice to leave a PC without leaving a trace as well.

67/512MB

Portable Firefox

portableapps.com/apps/internet/browsers/portable_firefox

You're not an IE fan, that's fine. Running a browser off a USB key also has the added bonus of not having to clean up your tracks after you're done on a machine, meaning you can browse spurious sites in impunity. Nifty! Now you can tab browse wherever you may roam. If you consider yourself more musical, or pride yourself on passing the ACID2 test, try portable Opera at www.kejut.com/operaportable.

88/512MB

Portable Thunderbird

portableapps.com/apps/internet/email/portable_thunderbird

Webmail can often be banned from the workplace, so running your own email client is quite handy. You may want to set it to leave email on the server, just so your thumb drive doesn't fill up. If you want to be even sneakier and have access to a command prompt, you could try a combination of SSHing into your home machine and running a text client such as PINE or MUTT – using a console always makes you look like you're doing work.

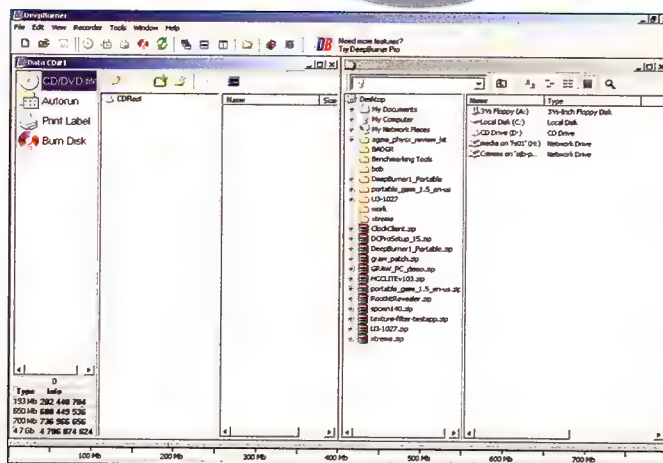
90/512MB

Calendar Extension for Thunderbird

www.mozilla.org/projects/calendar/calext/download.html

So you're too stingy to buy a PDA, yet you still want a calendar on hand at all times to see how things are progressing. Busy little socialite, aren't we?

The Thunderbird calendar extension is exactly like Sunbird, just without the executable overhead, and will allow you to stick your USB stick into any computer and organise your schedule, regardless of where you are. Well, except maybe the bush. Or the moon. Or places without electricity. Or computers for that matter.



▲ Deep Burner. It's like Deep Heat, but better, and doesn't hurt when smeared on genitals.

98/512MB

Deep Burner Portable

www.deepburner.com

'But... but... it has a DVD burner' you cry at the terminal, despite the complete lack of burning software available and installation of such programs being locked out at the administrative level. Deep Burner should help you rectify this problem for good, and consequently let you take your work home if you run out of space on your thumb drive. Unlock the joy of burning for the good of all mankind.

124/512MB

MAME

www.mame.net

Okay, so this one highly depends on the size of your ROM collection, but MAME can help wile away a boring lecture while making you look like you're working really hard. Just make sure to look up at the lecturer every now and then – make it part of the game. Robotron is so much harder when you're not looking at the screen.

150/512MB

Damn Small Linux (DSL)

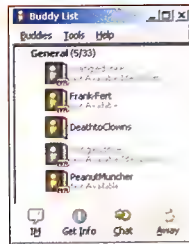
www.damnsmalllinux.org

Bootable from your USB key, providing of course that the motherboard supports it and the BIOS can also be accessed. Failing that, there's also an embedded version that runs from within Windows. A full list of applications included are at the Web address above, and you can even roll your own DSL pretty easily to include the applications you want – just be aware of your-space budget! If you're painfully conscious of being tracked at different terminals, this is the way to keep your privacy intact.

125/512MB

7-zipwww.7-zip.org

Insane compression at the right price: free. 7-zip will let you fit oh so much more on your portable storage if you find yourself running out of space. The usual program is included in an installer, so click on the Downloads link on the left, and download the command line version – this will get you a zip file that you can extract and use independently. Just make sure you have access to the command prompt in the first place!



▲ Use GAIM for personal gain.

course this can be expanded with any other command line tool you care to use (try unxutils.sourceforge.net for starters), making it an immensely powerful thing to have portable.

164/512MB

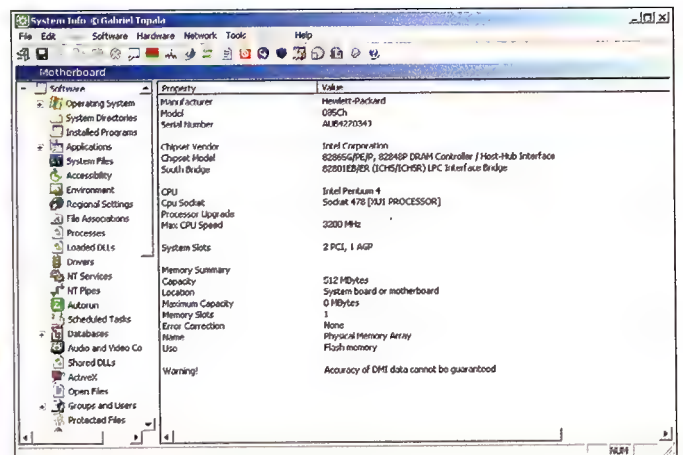
F@Hstanford.folding.edu

When proteins in the body are carrying out tasks, they arrange themselves first – this is known as folding. When a protein folds incorrectly, this can cause all sorts of diseases. Folding is still not completely understood, and so Folding@Home was developed, a distributed application to help solve the problem, using CPUs all around the world. There's even a team competition – if you wish to join up, check out this thread: www.atomicmpc.com.au/forums.asp?s=1&c=1&t=84136. While we don't condone elicit 'borging' of machines, it's always nice to be able to use the CPU cycles of the machine you're currently using to crunch a WU. You could even add it to an autorun file so every time you insert your USB key in a machine, it starts up automatically.

134/512MB

Portable GAIMportableapps.com/apps/internet/chat/portable_gaim

Although the proliferation and popularity of MSN can be arguably attributed to its default inclusion in Windows and sysadmin's apparent laziness in not removing it, other protocols can be nice too. Portable GAIM means you can chat the day away instead of doing proper work. Not that you shouldn't be doing proper work.



▲ System information for the win!

165/512MB

SIWwww3.sympatico.ca/gtopala/

System Information for Windows, in a single handy executable. Sometimes you just need to know the specs of a machine before you work on it, and there's no way normally to pull the amount of information required – SIW is your saviour.

171/512MB

Putty + UltraVNCwww.chiark.greenend.org.uk/~sgtatham/puttyultravnc.sourceforge.net

Sometimes you just have to access your home machine, whether to check on your downloads, to grab an extra file that you forgot to bring with you or even just to check everything is still running smoothly. These two apps should help you do that – providing you've set up a VNC listener and SSH server on the other end, of course.

172/512MB

µTorrentwww.utorrent.com

Always going to be contentious, since people are protective of their bandwidth. Nonetheless, if you can get away with using a torrent program, at 154KB µTorrent is easily the way to go.

182/512MB

Audacityaudacity.sourceforge.net

We've often found ourselves in a fix where we need to chop a sound



▲ VLC may look dull, but it plays pretty much everything.

161/512MB

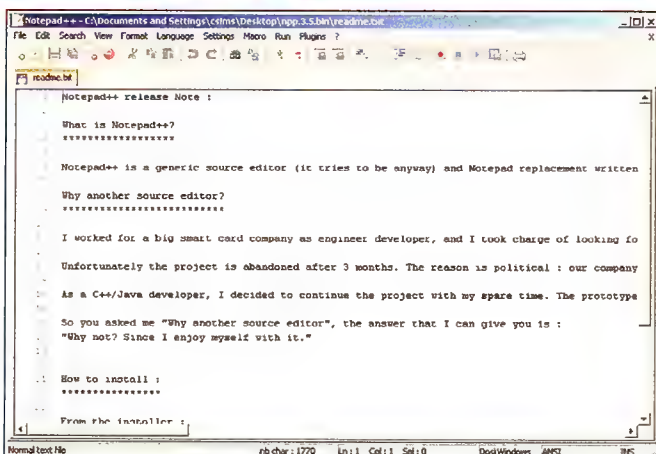
VLCwww.videolan.org

You can't trust a sysadmin to have installed all the codecs required to watch video, which unfortunately makes Media Player Classic a little useless. VideoLan Client should fill that gap by including embedded codecs – just make sure its always kept up to date, and ensure to grab the zip download, not the installer exe!

163/512MB

FreeDOSwww.jpsoft.com/download.htm

The nasty admin has taken away our command line, robbing us of one of the most powerful ways to achieve things. let alone buck the system. Let's put one back in by throwing FreeDOS on the drive. Grab the 1.44MB version from the latest distro folder, run command.com and you're away – you may have to download something like WinImage to extract it though, and you may want to refamiliarise yourself with the 8.1 DOS format. Of



▲ **Notepad++ - a whole lotta awesomeness bundled into one window.**

file quickly, and yet all that's been available is the paltry Windows File Recorder. Audacity offers a downloadable zip version that will happily run off your flash drive, opening the metaphorical audio barn doors for all.

184/512MB **NotePad++** notepad-plus.sourceforge.net

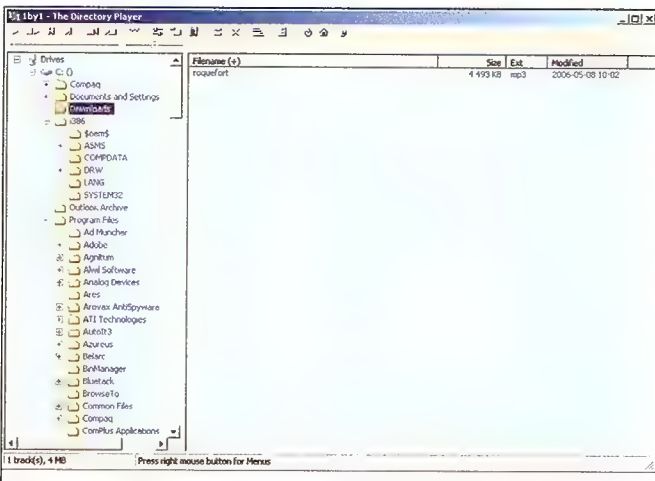
A freaking awesome little program that happily obeys the three Fs – fast, functional and free. A powerful text editor that doesn't need installation, fulfilling our requirements nicely.

188/512MB **Portable FileZilla** portableapps.com/apps/internet/ftp/portable_filezilla

If you don't feel like mucking about in the command line FTP, FileZilla is here to help. While FileZilla is normally portable in itself, this version is considerably smaller.

200/512MB **XnView Minimal + Plugins** <http://perso.wanadoo.fr/pierre.g/xnview/enxnview.html>

Image viewer that doesn't require installation, and pretty much loads any format you wish to throw at it, even audio. Pretty much required, considering how terrible Windows' default viewer is.



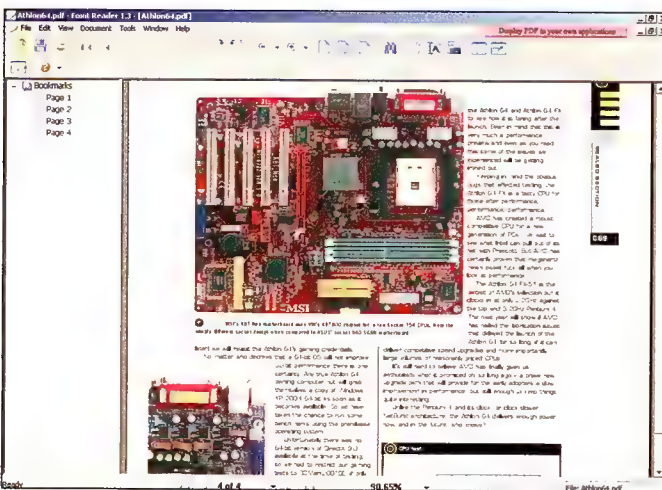
▲ **Not just a Foo Fighters album, 1by1 will play your music quite happily. It won't, however, clean your car, wash the lawn or mow the dog. Which is kind of fortunate. You never can trust dog mowers.**

367/512MB **Portable Open Office** portableapps.com/apps/office/suites/portable_openoffice

If, for some weird reason, the PC you're sitting at doesn't have Word or Excel, then you can thankfully run Open Office directly with little qualms, making a nice interim job until you can get back to the real thing.

368/512MB **1by1** www.mpsch3.de

Tiny, tiny audio player that'll simply play MP3s in a folder. Extract the exe to a folder rather than installing it (by using WinRAR for example) and it's set to go. If you need something that looks a little more like your traditional MP3 player, you may want to check out XmPlay www.un4seen.com.



▲ **FoxIT Reader is a light, and considerably faster PDF reader than Adobe's solution.**

371/512MB **FoxIT Reader** www.foxitsoftware.com/pdf/rd_intro.php

For whatever reason, some sysadmins just don't install Adobe Reader. FoxIT will help alleviate your pain, and is a damn sight faster too, while still retaining features such as search, page rotation and text selection. Basically, everything that's needed is kept, everything else is stripped. Just the way we like it.

371/512MB **VirtualDub** virtualdub.sourceforge.net

Sometimes ya gotta cut video on the fly, or change something quickly before handing in a final assignment. Heck, maybe you even just want to use someone else's CPU cycles to encode video while you wait for something else to finish. VirtualDub will happily run straight from the folder, and gives you a number of powerful post processing options to boot – if you're feeling adventurous you could even add plugins.

Conclusion

Most of the above programs will keep you satiated – however, there's no doubt you'll find small, portable and easy to use programs elsewhere that you'll want to add to the collection. Plus, there's just over 140MB left for documents, drivers and so forth – nothing that should be filled too quickly unless you do graphic design, sound or video, or intend to store programs on your drive.

Come to think of it, perhaps you'd better splash out on that 1GB, or even 4GB flash drive, you know, just so you can keep everything by your side. You never know when you might need it.



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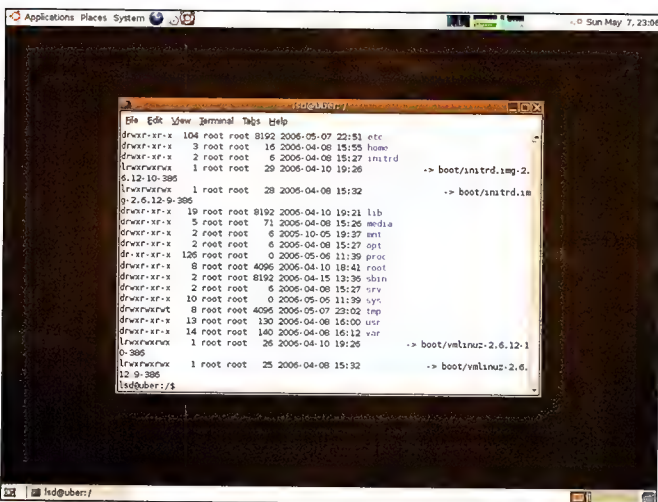
The Uber Linux Box Challenge Part 2

Grab your Tux plushie and get comfy, Leigh Dyer has the next installment of your Uber Box ready.

If you followed last month's tutorial you should have a shiny Linux system up and running, sitting on your LAN and sharing files. We have much bigger plans for your Uber Box than just file sharing though: we'll soon be installing it at the heart of your network, but before that can happen, we need to make the jump from friendly desktop system to lean, mean network server.

Shell games

The foundations of Linux are firmly rooted in the command-line interface, which is usually called the *shell*. You can use Linux without ever touching the shell, but when working on a server it's handy to know the basics at least. If you're having nightmare flashbacks to your DOS days, don't worry – the Linux shell is much nicer to use. You can open a terminal by selecting 'Terminal' from the 'Applications' desktop menu.



▲ A friendly shell in the Ubuntu GUI.

To get a directory listing, use the 'ls' command. Your current working directory will be your home directory to begin with, represented by the '~' in the shell prompt. You can use ~ as a shortcut for your home directory, which is actually stored in /home, in all shell commands. Use 'ls -l' to get a list that shows more than just the filenames. Change the current directory with the 'cd' command, and the shell prompt should change to match. For example:

```
cd /usr/share/doc
```

Many of the other commands are similar to what you'd find in DOS, though some have different names: use 'cp' to copy files, 'mv' to move them, and 'rm' to delete them. A lot of shell work involves text files: 'less' can view their contents, while 'nano' is a simple, friendly editor. If you're unsure how

to use any command, try running it with the '--help' option – most commands will display usage information when run like this.

The shell itself has some tricks as well, such as the Tab key, which can fill in file and directory names for you. For instance, type 'cd /u', hit tab, and the command should change to become 'cd /usr/'. You can do this as many times as you like, which is very handy when you're knee-deep in directories. Other handy shell keys include the up and down cursor keys to move back through your command history, making it easy to re-run an earlier command. You can even search through your history using Ctrl-R.

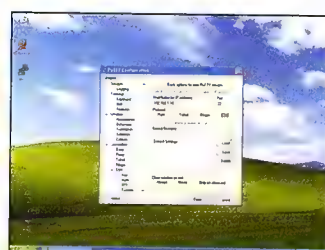
One final command you'll need to know is 'sudo' which lets you run any command with root privileges, instead of your normal user privileges. Linux has a strict permissions model, so you'll need to use sudo whenever you work on files outside your home directory, or whenever you need to run administrative commands. Don't worry, Ubuntu will tell you when you need to be root to run a command.

Network ready

If you think you're ready, you can turn your Uber Box in to a real server by enabling remote logins and disabling the GUI. To ensure that our remote logins are secure, we'll use the Secure Shell (SSH). Installing the SSH server through APT is a piece of cake. From a terminal type:

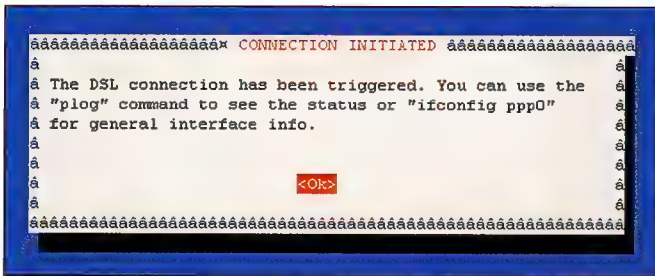
```
sudo apt-get install openssh-server
```

This will grab the SSH server packages, either from your Ubuntu CD or from the Internet, install it, start it, and configure it for automatic run at boot – and you were thinking that this command line thing would be hard! On your Windows box, download an SSH client, such as PuTTY (www.putty.nl) and connect to your Uber Box's IP address, entering your login details when prompted.

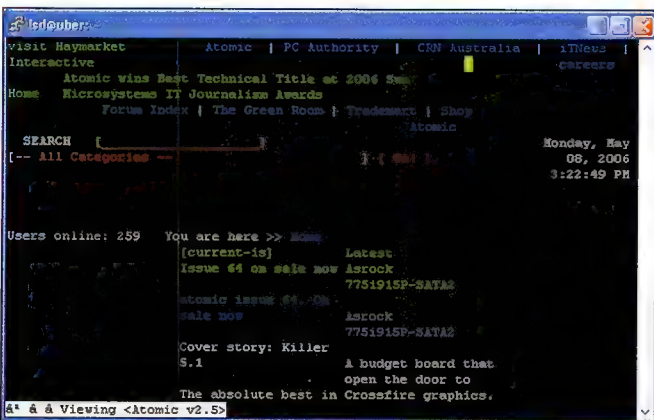


▲ PuTTY is the SSH client of choice for Windows.

Disabling the GUI is almost as easy. On an Ubuntu system, the GUI is started by a server application – or *daemon* in Linux-speak – called GDM (the Gnome Display Manager). Daemons are usually managed through scripts in the '/etc/init.d' directory, and GDM is no exception. To shut it down, run this command:



▲ Your ADSL should be up in no time.



▲ The Atomic Website, as you've never seen it before.

w3m www.atomicmpc.com.au

Hit 'q' to exit w3m. If you run into problems, check the basics first: be 100% sure that the modem is plugged in at both ends, and re-run 'pppoeconf' to check your login details. If that doesn't resolve the issue, running the 'plug' command to check the PPP log. The error messages listed there aren't always clear, but a quick Google search on them can often point you in the right direction.

Route 401

Your new server should now be connected to the Internet. That's pretty neat, but hey, even nanna can get online. If it's going to become a router and firewall, it needs to do some routing and firewalling. In our case, routing means Network Address Translation (NAT), the technology which gives Internet access to your LAN through a single public IP address.

Both NAT and firewalling are configured using the 'iptables' command, which is built on the idea of running network packets through lists of commands called 'chains'. There are three fundamental chains called INPUT, OUTPUT, and FORWARD, which handle packets coming in, packets going out, and packets being forwarded to another address, respectively. The INPUT and OUTPUT chains only handle packets either destined to or coming from the router: packets being forwarded skip straight to the FORWARD chain.

When a packet enters a chain, it is compared in turn against each rule in the chain. On the first match, the matching rule's policy – usually ACCEPT or DROP – is applied to the packet. Any packets that make it through without matching a rule inherit the chain's default policy.

A basic firewall design needs to do a few things:

- Allow packets travelling between the router and LAN
- Allow packets travelling from the router or LAN to the Internet
- Allow packets travelling from the Internet to the router or LAN only when they're in response to an outgoing request
- Drop *any other packet*

To make it easy, and because we actually like typing in code, here's a firewall script written for you. Open a terminal, type 'nano firewall' and enter in the following:

```
#!/bin/sh

# some handy variables
WAN_IF=ppp0
LAN_IF=eth0
LAN_NET=192.168.1.0/24

# default chain policies
iptables -P INPUT DROP
iptables -P FORWARD DROP
iptables -P OUTPUT ACCEPT
iptables -F
```

```
# Allow localhost traffic
iptables -A INPUT -i lo -j ACCEPT

# Allow LAN traffic
iptables -A INPUT -i $LAN_IF -j ACCEPT

# Allow outgoing connections from LAN
iptables -A FORWARD -o $WAN_IF -p tcp --tcp-flags SYN,RST SYN -j TCPMSS --clamp-mss-to-pmtu
iptables -A FORWARD -i $LAN_IF -s $LAN_NET -o $WAN_IF -j ACCEPT

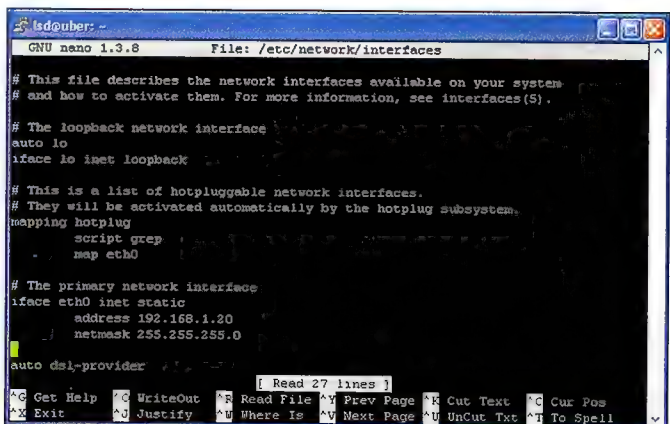
# Allow return packets from Internet to router/LAN
iptables -A INPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
iptables -A FORWARD -i $WAN_IF -m state --state RELATED,ESTABLISHED -j ACCEPT
```

```
# Enable NAT for outgoing LAN traffic
iptables -t nat -A POSTROUTING -o $WAN_IF -j MASQUERADE
```

The best way to build a firewall is to deny everything by default, and that's what we've done – we set the INPUT and FORWARD chain policies to DROP, and then add rules to ACCEPT only the packets we want. You can do the same with OUTPUT, but since we allow all outgoing packets, we've left it empty with an ACCEPT policy for brevity.

Save the file then copy it to '/etc/ppp/ip-up.d/' (so it will be run automatically when your ADSL connection comes up) and make it executable:

```
cp firewall /etc/ppp/ip-up.d/
sudo chmod +x /etc/ppp/ip-up.d/firewall
```



▲ Editing the all-important firewall script.

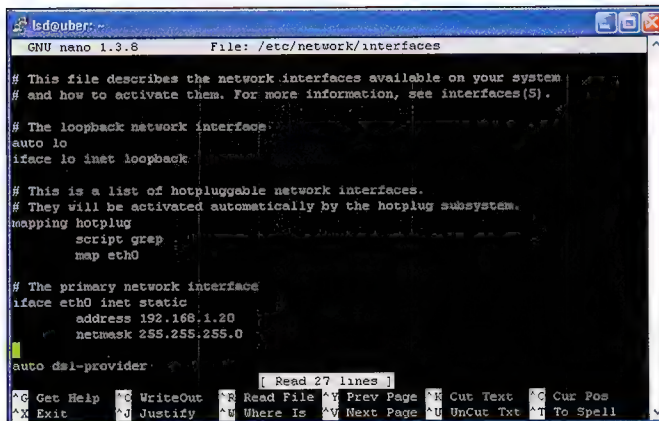
Network services

It's very common for hardware routers to handle local DNS and DHCP services to help you run your LAN, and our Uber Box wouldn't be at all uber if it didn't do the same thing. If you configured your Uber Box to use DHCP to configure its networking in part 1, you'll have to give it a static LAN address before installing any DHCP serving software. Open the /etc/network/interfaces file and find a line that reads:


```
iface eth0 inet dhcp
```

Replace that with this, changing the details if required:

```
iface eth0 inet static
address 192.168.1.20
netmask 255.255.255.0
```



Manual network configuration.

To implement the changes, run 'sudo /etc/init.d/networking restart'.

There are various server applications available for DNS and DHCP, but for a small LAN all you need is 'dnsmasq', a small program that does both. If you enabled the 'universe' repository of optional applications in part 1, you can use apt-get to install it like so:

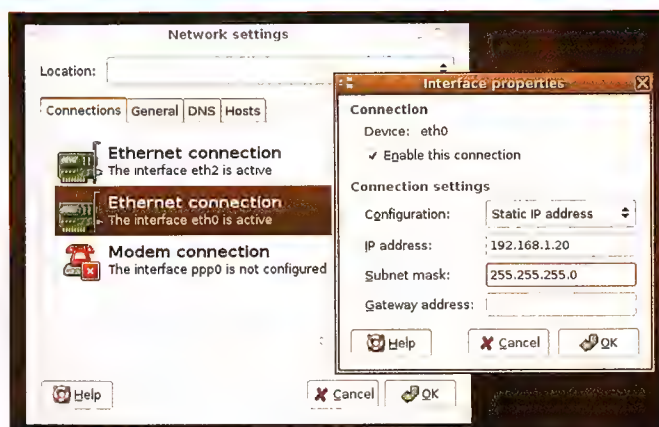
```
sudo apt-get install dnsmasq
```

The configuration file, stored at /etc/dnsmasq.conf, is quite verbose, so we'll replace it with a shorter version that contains only the options we need. Type 'nano dnsmasq.conf' and enter the following:

```
domain-needed
bogus-priv
local=/localnet/
interface=eth0
expand-hosts
domain=localnet
dhcp-host=00:11:2F:DE:3F:F7,cletus
dhcp-range=192.168.1.50,192.168.1.150,12h
```



▲ You can add a nice network monitor to your desktop panel.



▲ Editing network settings the easy way.

Edit any options if they don't match your setup, save the file and copy it to /etc. Then restart dnsmasq:

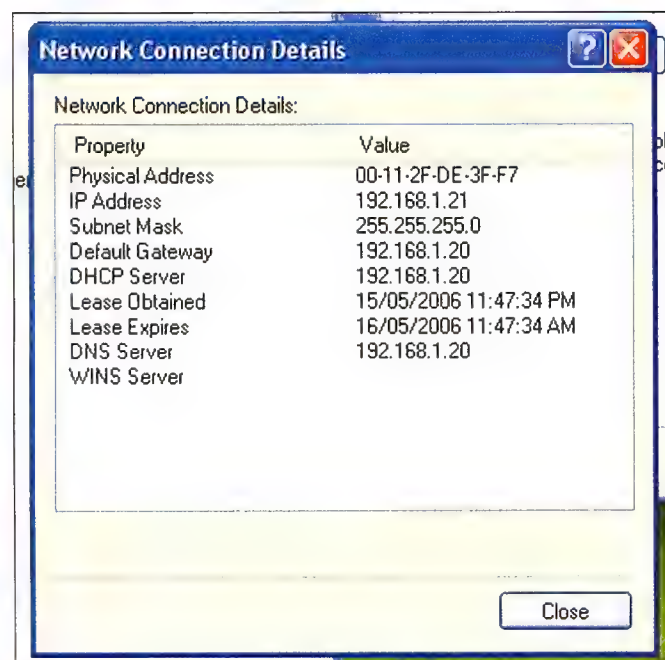
```
sudo /etc/init.d/dnsmasq restart
```

For DNS, dnsmasq performs a clever trick: it serves the data contained in the '/etc/hosts' file out to your LAN. /etc/hosts is used locally for looking up names before asking a DNS server, so once you've put the names and addresses of machines on your LAN in there, you can refer to them by name from your Uber Box. With dnsmasq running, any machine using its DNS services (any that have been given an address through DHCP should be) will be able to look these names up as well. The format is simple enough: it's one IP address per line, with the IP and name separated by spaces:

```
192.168.1.20 uber
```

After editing /etc/hosts, restart dnsmasq again, and you should be able to do things like connecting to 'uber' instead of '192.168.1.20' in PuTTY.

Next month, we'll be looking at port forwarding for BitTorrent and other tools, proxies, web serving, and robust, secure file sharing. See you then!



▲ Windows running with automagic network settings from our DHCP server.



HARDWARETUTORIAL

Re-building the beast - Part 1

Ron Prouse takes his old Lian-Li to task, and gives it a new lease on life.



Supplies

Thanks to PC Case Gear (www.pccasegear.com) for supplying the following parts needed to make this tute a reality:

- 1x CoolerMaster 120mm aluminium fan, \$18.00
- 1x CoolerMaster 80mm aluminium fan, \$29.00
- 2x Meshx fanguards - 120mm silver, \$6.50 ea.
- 1x Swiftech MCW60 VGA water block, \$99.00
- 3 metres Clearflex tubing, \$7.50 mtr.
- 1x Swiftech MCP655 pump, \$139.00
- 1x Swiftech MCP600 pump, discontinued
- 1x Black Ice Xtreme 120mm radiator, \$95.00
- 1x Black Ice Xtreme 80mm radiator, \$59.00
- 1x Asetek 03-L-9010 Waterchill hard drive cooler, \$129.00
- 1x Lian-Li TR-3 silver LCD thermometer and fan controller, \$39.00
- 1x Lian-Li 80mm airflow duct kit, \$39.00
- 1x Ultra X2 550W modular power supply, \$189.00
- CoolerMaster SAG-K01-U1 liquid, \$22.00

Thanks to Altech Computers (www.altech.com.au) for:

- XpertVision GF6800GS Super 512MB DDR3, AGP 8X, \$399.00

And finally, thanks to David & Karma's PC Cooling Gear: www.davidandkarma.com.au for these final bits of necessary kit:

- 2x Dangerden Fillerport - 1/2in silver, \$19.00 ea

Disclaimer

Whenever you pick up power tools, cutting and grinding instruments, or even a can of spray paint, you are putting your general wellbeing at risk from some form of industrial level accident. We take every precaution by wearing appropriate safety equipment, using tools with respect and within their limits, and by not inhaling the contents of glue and paint containers. We suggest that you should follow a similar regime, and seek professional assistance and guidance if you are attempting a task outside of your skill set.

NB. Atomic and staff are not responsible for your safety or longevity. Or the hair on your cat remaining one colour.

Tools

The tools used in this part of the tutorial are mainly those found in the average garden variety shed, including a Dremel, jigsaw, sandpaper, metal nibbler, drill press, drills and taps, acrylic sheet off-cuts, masking tape, plastic glue, two-pack epoxy adhesive, 150mm bench grinder, polishing wheels, Josco polishing compounds and aerosol paint. The main requirement is a decent bench or table, providing a solid, flat surface to operate on.

Back in 1999, I received a very cool birthday present - a Lian-Li PC-60 case. There was nothing inside of it, not even a power supply, and yet it was the best present I could possibly have asked for. To illustrate my overwhelming gratitude and joy, the first thing I did was to take this wonderful, shiny new thing out into the workshop... and cut a great big hole in the side of it!

You see, for many months I had been planning this operation, and in my mind I had a firm template of what this case would look like when it was finished. With zeal, I went about performing the mods and tweaks that I knew would set this case well apart from the 'rank and file' mods that were beginning to appear on the (very few) case gallery sites that existed on the Net.

At that point in time I was only aware of one other Lian-Li case that had been modded, and that case was the benchmark that I set out to eclipse. There were very few, if any, 'off the shelf' modding parts available locally; factory rounded cables were only available ex-USA, at a delivered cost of about AU\$40 each, and every optical drive in the world was a beige CD-ROM - a HP 4x IDE CD-RW retailed for \$700! The choice in case lighting was restricted to either home-made LED-clusters or 30cm neons made for auto use, the latter priced at \$80 a pair at Jaycar. In this embryonic scene, everything was 'new', and the appearance of a fully customised Lian-Li case hit the front page of every review site on the Net.

The case was later published in *Atomic Hotbox* #15, and it was that process that started me writing for this esteemed magazine. My first *Atomic* tutorial, the 'Heavy Water Project' case, was a Lian-Li PC-70 built on the same basic formula as this 60.

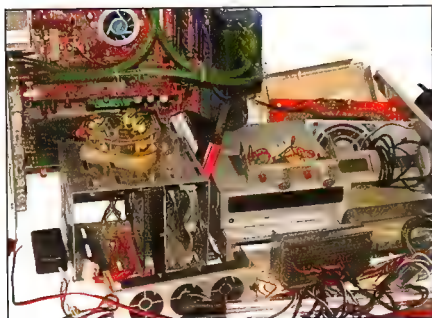
So, to me at least, this PC crate has some history. In fact, it has some additional significance. Not long after the case hit the Net internationally, I was approached by the UK Lian-Li distributor, asking if it would be okay for it to use the case as a template for some genuine Lian-Li bolt-on bits that the manufacturer was contemplating. I said 'Yes', and Lian-



Li used the side window dimensions, CompuNurse panel, aluminium optical and floppy bezel cover designs.

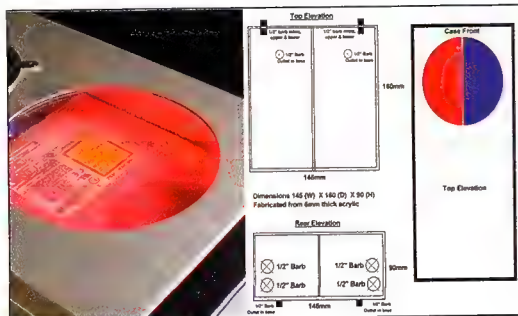
Why does all of this have any relevance to this tutorial? Well, for the last three years this case has been sitting in my workshop, gathering dust and scratches while being used as a home for cast-off parts that are too good to throw away... sort of a PC junk cupboard! A few weeks ago I had a massive workshop spring-clean, and this case ended up on top of the pile of stuff to be dumped. And then sentimentality kicked in. It deserved more than to be kicked aside, and so a project concept was born – to take a case that had already been extensively modded in an 'old skool' fashion, and make it relevant using contemporary ideas and components... in fact, to make it a 2006 *kick-arse* box while overcoming some of the previous 'damage done'.

1 The obvious place to start was to empty out all of the old components, and by that I mean absolutely everything, including the video card, motherboard, wiring, 10 fans, lights, the works. If you are going to re-invent something from the ground up, there is no point in hanging on to anything just for the sake of it, as if it still has a place it can be fitted again later. Since finishing the original build a Thermaltake Aquarius II CPU watercooling system had been fitted, fabricated so that the whole cooling loop would slide out with the removable motherboard tray. Unfortunately, to achieve that a large amount of the backplane sheet-metal had been cut away, and this will be one legacy to overcome later. I must admit, for a relatively small midi tower there was a huge pile of electronic crap sitting on the bench when I was finished!

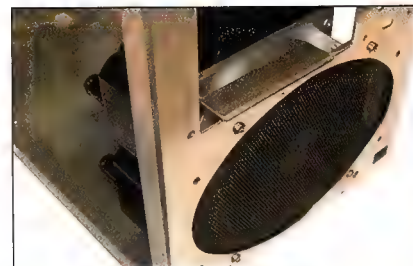


2 With any project, the first issue is to plan a concept that works within the case design, and the main design attributes that impact on 'what can go where'. Back in 1999, there were a lot of peripherals vying for space in the average midi tower. Small capacity hard drives meant that there were usually several packed into the 3.5" bays, while two optical drives were the order of the day as separate CD-RW & DVD-ROMs were required. These days, the availability of inexpensive combination optical burners and 500GB+ hard drives means that a lot less space is required.

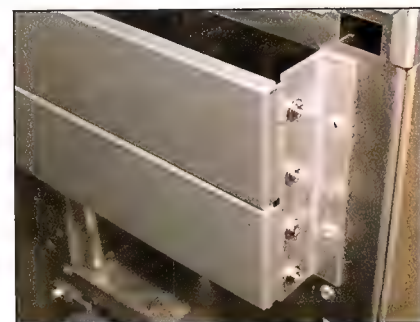
One of the previous mods this case had endured was a 140mm porthole cut into the top-front section, originally installed to show off a 'window in a DVD-ROM' mod. My first concern was that this opening was too big to be used as a fan outlet. However, a simple concept soon emerged that will characterise the mod from this point on – it is the perfect spot for a coolant reservoir. As the planning process evolved another twist was added, and the decision was made to fabricate a dual-chamber coolant reservoir as part of a dual-channel water cooling solution. Running blue and red coolant, side by side, and displayed through the top of the case, this attribute would become the defining difference of the project. Okay, now we have a vision to work with!



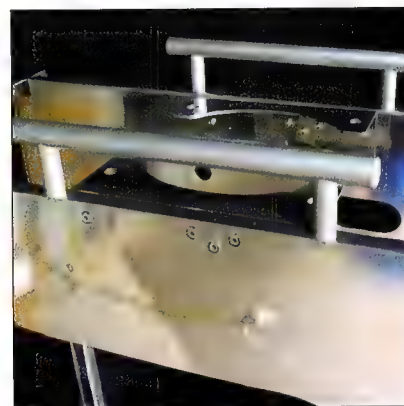
3 The initial physical step was to prepare the stripped chassis for the mods to come, which included cutting holes and adding additional mounting brackets. Where possible, all alterations were made from aluminium, in an attempt to maintain the 'metal sculpture' finish of the case. First step was to cut the front plate to accept the 120mm fan for the lower radiator. The standard case came equipped with two 80mm fans side by side, so the outer edges protrude past the 120mm inlet. Rather than create a new front panel of the correct size, it was decided to allow additional air to flow through these sections, so that ambient air can be drawn into the case by the top and PSU fans, and then mix with the warmer air that has already passed through the radiator. This should help to keep the case interior better ventilated. A metal-bodied CoolerMaster fan was tapped to accept 5mm screws, and a section of mesh cut to size and sandwiched between the fan and front bezel to act as a filter/fan guard.



4 Angle brackets fabricated from L-profile aluminium stock were riveted to the case fascia as locating points for the two upper 5.25" bay covers, due to the reservoir blocking the OEM Lian-Li cover-plate retention system from being used. To get the placement right, the cover plates were fitted into their correct position using the original locating system, and then holes drilled through the brackets and covers for the new retention screws. Using 3mm screws in 4mm holes will allow for some adjustment when aligning them with the bezel later. The sides of the cover plates were then cut off level with the inner lip of the bracket.



5 Another legacy of re-working a previously modded case now became obvious. The case top had previously been fitted with a 92mm blowhole, and the screw-holes were impossible to work into a 120mm cut-out. Overcoming this required a 'stealth fan' mod, so that the fan placement no longer has any tie to the position or dimensions of the vent in the outer cover. Another two 40mm x 40mm x 120mm sections of aluminium were riveted into the top of the case, between the reservoir and the power supply, to form a support bracket for the 120mm top blowhole. Once in place, the upper section of the bracket was cut to suit the shape of the fan and the retaining screw holes were countersunk to give a flush finish 1mm lower than the top of the chassis rails. Two aluminium handles were mounted through the top chassis rail, as this is the strongest section of the upper case – they will screw through the top cover in final assembly. Two threaded metal spacers were screwed into the side of the 5.25 bay brackets, to be used to hold an additional cover plate into place later.



6 Acrylic off-cuts were laminated into blocks 20mm high to support the intended false-floor, and secured into place by screws passed through from under the case. The final step was to give the entire chassis a thorough polish, getting as much of the sheet-metal to a mirror shine as possible, especially important as it had collected quite a few battle scars over the years. Firstly, all residue from double-sided tape, zip-tie blocks and hot glue was removed by wiping over with acetone, and all of the holes in the chassis were slightly countersunk to smooth them off. The buffing process involved using a ½ horsepower bench-grinder with 200mm buffing wheel attachments, starting off with a coarse sisal wheel and Josco 'Fastcut' compound buffing polish, progressing through a stitched cloth wheel with Josco 'Tripoli' polish, and finishing off with a loose leaf calico buff and Josco 'SS Compound' polish. The chassis was then finally buffed by hand, using 'Artisan' metal polish, to remove any residual polishing compound and give the surface a protective coating.

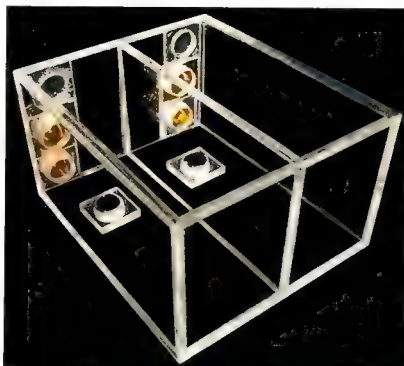


7 The reservoir template outlined in Step 2 was now fabricated, using 6mm thick cast acrylic. The concept itself is fairly simple, just take seven pieces of sheet acrylic and glue them together into a box, with a divider through the centre. The main threat is that, due to its complexity, the reservoir will leak externally, but there is also the secondary issue that it will leak internally between the two chambers. To give each joint as much strength as possible, by maximising the jointing area, all of the edges were routed at 45° which will increase the contact surface by nearly 50% compared to a simple butt joint.

The position for the centre divider was marked, and then a 6mm wide by 3mm deep rebate routed into the four contact surfaces – top, bottom and ends. Once all of the components were fabricated, they were assembled using IPS Weldon #16 glue and clamped together until dry. To minimise the incidence of 'bubbles' in the final joints – *which is actually air sucked in by the capillary action from the chemical bonding* – about 20% more glue was used than really necessary for adhesion. The end result of this was a fine ridge of excess glue along the inside of each jointed section, which should also help add to the integrity of the chambers.

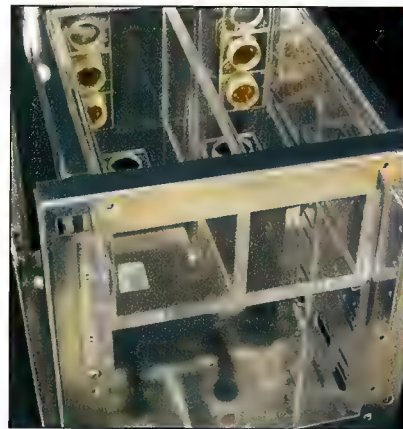
The next step was to drill and tap the holes for the fitment of the barbs,

which ended up taking two attempts (as I forgot which side was 'up')! Rather than just use the 6mm thickness of the panels, additional acrylic squares were laminated onto the outside of the reservoir, so that the mounting holes were 12mm deep. This will make sealing the barb threads much easier and add strength to the final assembly.

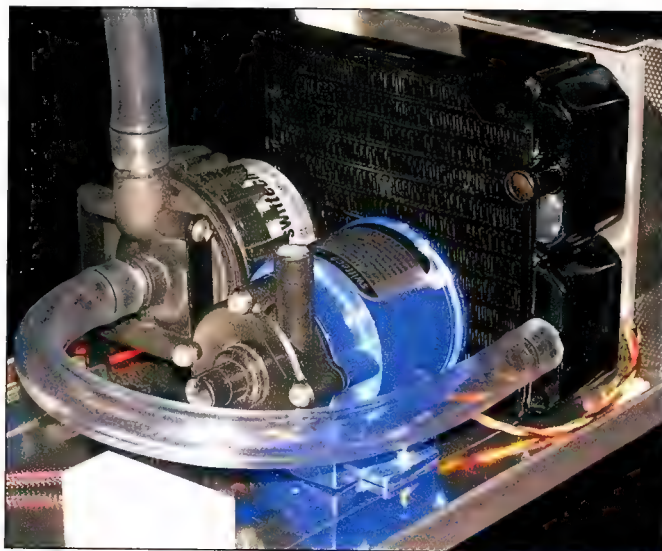


8 The reservoir is a snug fit in the top of two 5.25" bays, and also takes up most of the 20mm area airspace above the top bay, so that it sits up hard against the glass porthole in the top of the case.

10mm square acrylic brackets were fabricated to retain the unit from underneath. Two barbs were fitted to the rear of the reservoir chamber, the upper one to be used as a filling point, the lower as the return-line inlets. The upper barbs were spaced down 30mm from the top of the case to make room for the 120mm fan that sits directly behind it. The outlets were fitted into the base of the chambers, and these 90° fittings will direct coolant flow back into each of the radiators.

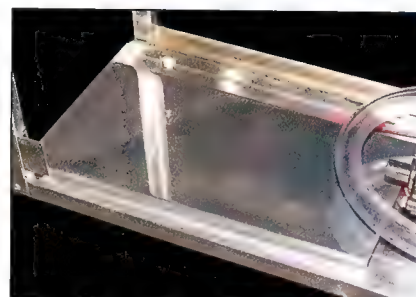


9 The next step was to re-fit the radiator and front fan, and then ascertain the best placement for the two pumps. As this system will only be running the one large hard drive, the original HDD rack could be sacrificed to create the required space. This done, the main factors to consider were the restriction to the airflow through the radiator and the alignment of the pump spigots in relation to the other cooling system components. Although it would have been aesthetically pleasing to use two identical pumps, the Swiftech MCP600 pump (blue) was slightly slimmer and lower than the MCP655 (black) unit, making it a better choice for the central position. The offset outlet of the MCP600 also had advantages in alignment. To get the MCP655 (black) pump in the ideal position, the motherboard tray had to have a 110mm x 20mm section cut out of the lower, front edge, and the plastic fins on the outer side of the pump body had to be removed for clearance against the outer side-cover.



10 One of the more useful but simple case mods is a false floor – it allows wiring to be concealed and can add decoration to

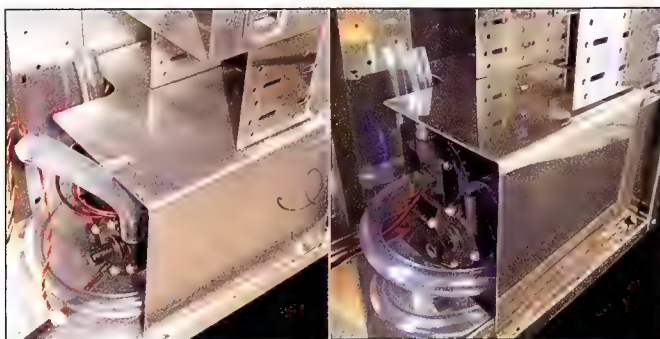
an otherwise boring area. In the past I have mainly used polished checker-plate, but for this mod I decided to try and emulate the existing case construction with 2mm thick plain sheet. The first step was to fold a pair of right-angle bends into the side, so that the



flat section had a rise of 22mm – that brought the floor height to exactly the same level as the bottom of the IO panel. Mounting holes were then drilled, three along the case side and two in the centre, the latter positioned so that they aligned with the two acrylic spacers mentioned in Step 6. The last 5mm of the floor closest to the motherboard was then bent down in a rounded 90° curve, mainly to act as a retainer for wiring passed underneath, but also to make it look more 'factory finish'.

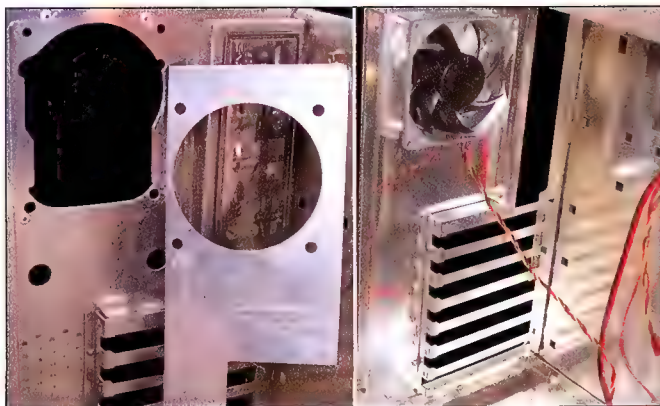
The mounting holes were then countersunk, and the finished floor plate polished to a mirror shine using the same buffing method as outlined in Step 6. With the visible section of the original floor polished in a similar way, the false-floor becomes almost camouflaged.

11 To maintain the polished aluminium theme, another cover plate was fabricated to cover up the pumps, radiator and front fan. As with the floor, the first vertical fold was 15mm back from the inner case edge, to make sure that there was enough room for the outer side cover locating tabs to fit correctly. The lower 10mm of the 3.5" rack was trimmed away, and the cover was then sculptured across, around the motherboard tray and inner pump outlet and through to the left-hand side-cover. Three 3mm holes were drilled along the section that mounts to the floor, and a polished aluminium L-bracket fabricated to secure at the centre of the inner cover edge. Being completely open on three sides, the cover does not affect case airflow, however, it is a great way to conceal most of the ugly stuff later on!



12 The next problem area was the rear panel, which forms part of the removable motherboard tray. The section around the original 80mm fan hole of this panel had been modified previously to accept a Thermaltake Aquarius radiator, mounted externally, with 5/8" holes for the hoses to pass through.

There were three obvious options to get around this: modify the new radiator to fit in the existing surroundings, re-creating the whole rear panel, (which seemed a bit extreme), or to fabricate a cover plate that could be fitted over the inside of the existing panel from 2mm thick aluminium, and worry about the look of the outside-rear later. Option three was the winner. The cover comprised of a 'squared-off P', with an 80mm hole cut into the large section for a new fan. The plate was cut and sculpted to shape, and then polished to a mirror finish. Two pop



rivets were used to tack the cover to the backing plate, and once the rear radiator fan fitted it was effectively sandwiched into position.

13 So, what is the easiest way to cut out a fan hole in thin sheet metal? Although this task could be achieved with a jigsaw or nibbler, in a situation where the hole is close to an edge or in thin sheet, life is made much easier if you use a suitable-sized hole-saw... which brings us to the issue of how to use one effectively. After marking the centre of the proposed hole, the 4 x 13/64" fan mounting holes are drilled and countersunk, and then the holes are used to attach the sheet-metal to a block of hardwood, 25mm+ thick.

Why the wood support? If you drill through just the sheet metal using a hole saw, there is a high chance that the central pilot hole will elongate causing the fan hole to end up being elliptical instead of round. The other reason is that, once clamped down, the wood will stop the metal from moving / spinning around. Rather than use a hand-drill, a drill press will help to keep control of the process so that everything remains square and centralised. On aluminium, a small amount of silicon spray helps to reduce chatter and maintain a smoother cut, while WD40 lubricant will have a similar effect when cutting steel.



14 At the end of Part 1, the chassis is already looking ready for business – the radiators and fans are locked into place, the reservoir is a secure fit, and the additional sheet metal looks almost factory finish. The round 'cap' on the upper side panel is a Dangerden Fillerport – a second one is fitted on the other side – and will be the maintenance opening for the cooling systems.

The chrome fan-shroud is part of a genuine Lian-Li accessory, and it was used to help conceal some of the water tubing later on – the rest of the kit will be used elsewhere later. Part 2 will chronicle the work on the outer covers, which is where most of the 'reconstructive' work will take place, including a larger top blowhole, window change, power switch mod and reworked front air intake. See you next month!



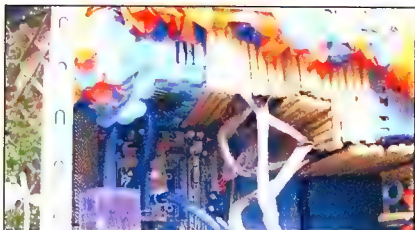
ATOMIC HOTBOX

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RUNNERS UP ▼ RUNNERS UP ▼ RUNNERS UP ▼ RUNNERS UP ▼ RUNNERS UP

Martin's Tikki v2



technical details

- 1300 tiles of coloured glass
- 8m Bambus
- 10 sorts of wood
- DVD mod
- Turnable internal webcam
- Self-built watercooling reservoir

Matt's MG52



technical details

- Intel Pentium 4 3.0GHz
- Gigabyte 8IPE-775 Pro
- ATI RADEON 9550
- 2x 512MB DDR400
- Seagate 160GB SATA HDD
- JSP Bluefire 500W

Cato's Extreme Machine



technical details

- AMD Athlon 64 3200+ @ 2.7GHz
- ASUS A8V Deluxe motherboard
- PowerColor X800PRO VIVO
- 4x 512MB Corsair XMS TwinX 3200
- 2x 250GB Seagate 7200rpm HDD
- Koolance Exos watercooling system

hotbox OF THE MONTH

HOTBOX

Phil's Portable PC

The case is just a standard aluminium tool case. There are five full height PCI expansion slots. I made a right angle VGA plug to connect to the video card, and a right angled 5-pin-DIN to USB adaptor for the mouse connection, and a hinged perspex cover over the IO ports. There is a custom connector to pickup the motherboard sound DIL connector, this connects to a stereo amplifier that was removed from a pair of amplified speakers. I originally built it for work – I wanted something that was portable, could be easily upgraded, and could have several RS-232 & LAN ports (for interfacing to industrial control gear). It turned out to be very handy for LAN parties.

Phil



technical details

- Intel Pentium 4 1.6GHz
- 512MB RAM
- Gigabyte P4 Titan motherboard
- ATI RADEON 9200
- NEC 1550V 15in LCD
- Western Digital 80GB



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- 3-4 high resolution, well lit, pictures.
- A 250 word description of how you made it, the obstacles you overcame, the tools you used, and your inspiration.
- A detailed list of the machine's specs.

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- Intel 975X Chipset
- Custom cooling system
- Dual BIOS protection
- SATA 3Gb/s, RAID
- Creative SBLive 24-bit sound



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GAMEPLAY

GAMES, GAMING AND GAMERS
COVERED ATOMIC-STYLE

I hope PhysX takes off. I totally buy into AGEIA's marketing pitch that game PCs should be a triumvirate of CPU, graphics and physics. It makes complete sense to share the gaming PC's load around purpose-built hardware. It's something the platform has needed since its conception.

The original design fundamental of the PC was that the CPU would do everything. If the tasks became too demanding then you would just get a faster CPU. This simplified the standards process and played a big part in the success of the 'IBM-compatible PC'. This worked just fine for PCs back then that only ever had to run simple office apps.

Side by side with the PC rose the Amiga, with dedicated chips for all 'multimedia' tasks. This task-splitting was elegant design and allowed each task to be done excessively well rather than passably poor. For reasons unrelated to its architecture, the Amiga eventually withered and died. But while it lived, it attracted criticism of being only a 'games machine'. Well, that it was, and there's no shame in admitting it.

The PC and its increasingly powerful CPU lived on, and branched out to include a GPU for 3D graphics. That the original 3dfx took off is no massive surprise. It has a wonderfully easy entrance to the market. Supporting GLQuake, a game that *everybody* owned, and was busy fiddling to get the best graphics detail, was a gift. AGEIA doesn't have it so easy. At press time, there are no games

that support it. Cellfactor stands as only a tech demo, and nobody has it. Ghost Recon Advanced Warfighter doesn't count because a few extra sparks in an explosion doesn't constitute anything worth mentioning. What AGEIA needs is a killer app, and fast.

Hardware physics opens up creative opportunities that we can only imagine. We desperately need to see clever implementations across a range of game genres. I want to see flight sims and driving games use this thing to enable orders of magnitude improvements in handling, and I want to see hundreds of cars or planes on the screen. NVIDIA has already jumped onboard the Havok FX software 'solution', saying that SLI rigs can dedicate one card to physics, therefore the physics are 'free' and there's no need to buy a AGEIA card. Free my arse. If you've paid close to a grand for a graphics card you want it doing what you bought it for, doubling your framerate. Or trying to.

No, we need dedicated hardware physics. AGEIA has a tremendous uphill battle with almost everything conspiring against it. It needs game support, but developers need a high installed base to make development worthwhile. Stuck in a catch 22, we watch as time dictates this turn in PC history.

Ben likes turning.
ben@atomicmpc.com.au



Scanner

Gaming news. And Kate Inabinet talks a lot about the Wii and how silly the name is.



Talking Head

Logan Booker still finds something Oblivion-related to talk about.



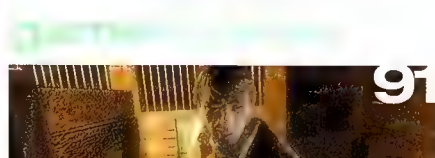
Pipeline

Future games or games of the future? Both, actually. Check out this mean section for previews galore.



Engine Room

Everything you wanted to know about Battlefield 2142. And pancakes. But mostly BF2142.



Condemned



Heroes of Might and Magic V



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SCANNER

GAME, INDUSTRY AND
ONLINE NEWS FOR THE
ENTHUSIAST

short circuits



THQ and Pandemic have recently announced a sequel to *Destroy All Humans*. Set for release later this year on Xbox and PS2, it will feature a co-op mode, five new worlds and larger variety of humans – ranging from communists to ninjas – to abduct, probe, electrocute and disintegrate at your leisure.



EA is currently working on an new technology, called 'Athletic Performance' that will do away with motion

capture for EA's range of sports titles and let animators add that authentic, unique touch to each athlete by configuring length of stride, the swing of their arms, etc. We'll give you more as we get it, so watch this space

THQ has just announced that it is working on a game based on the hit television series, *The Sopranos*. Fans will be pleased to hear that the cast, including James Gandolfini, have lent their voices and likenesses to the game. Expect to visit locations such as Vesuvio's and the Bada Bing!

Relic Entertainment has unveiled a second expansion pack for the popular RTS *Warhammer 40,000: Dawn of War*. Set for release in spring, *Dark Crusade* will introduce two new races to the fray – the Necrons and the Tau. Expect a new singleplayer campaign and more multiplayer options.



The e-distribution revolution

Christopher Taylor wants his games, right now.

If you've been paying any attention to gaming news sites in recent months, you may have noticed that the move towards online distribution is steadily gaining momentum. Valve's Steam distribution service is now used by a number of developers, including Tripwire Interactive (*Red Orchestra*), Ritual Entertainment (*SiN Episodes*) and Reality Pump Studios (*Earth 2160*).

EA has also gotten in on the act, with expansion packs for *Battlefield 2*, *Black & White 2* and *The Sims 2* being made available through its Downloader service (www.download.ea.com).

Eden Games isn't one to miss a trend either, it seems. At the moment, it is working on a new *Alone in the Dark* game for Xbox 360, which it plans to release episodically. Each episode will offer roughly 30 to 40 minutes of gameplay. Essentially, the idea is that 'bite size chunks' are far less intimidating to a casual gamer than a single, 10 hour long play experience. Just like in a television show, each episode will begin with a series of flashbacks that sum up the story so far. Atari, who is distributing

Alone in the Dark, claims that 'every episode will close with a nail-biting cliff-hanger to rattle players' nerves [and] a video teaser of the next episode [to] leave them wanting more.'

The three next gen consoles will already have implemented online distribution systems to varying degrees. In the case of the Xbox 360, Microsoft is offering the Arcade (www.xbox.com/en-AU/games/livearcade) and Marketplace (www.xbox.com/en-AU/live/)

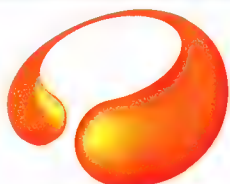
services.

Interestingly, during E3 Microsoft expanded Marketplace, giving Xbox 360 owners the chance to check out exclusive demos, trailers and interviews from the event.

On the other hand, Sony is hyping its E-Distribution Initiative (us.playstation.com/beyond).

According to the information that's been released so far,

the PlayStation 3's online service will support episodic releases and user-created content. It's also believed that you'll be able to purchase and download music, movies and PSX and PS2 games directly to your hard drive.

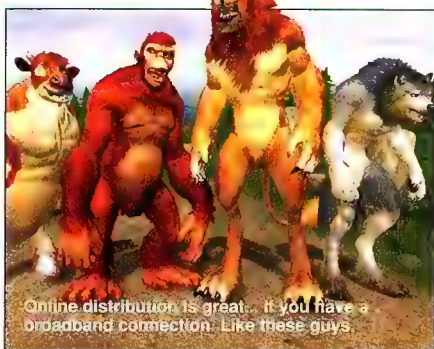


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...ARE LOOKING FOR GEAR FOR YOUR XBOX 360?

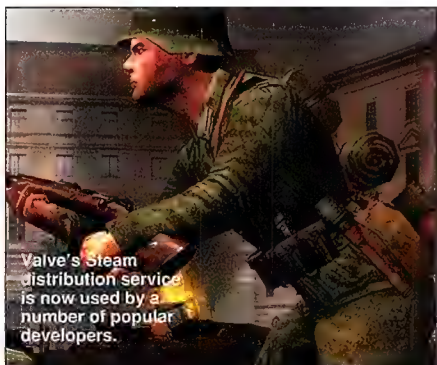




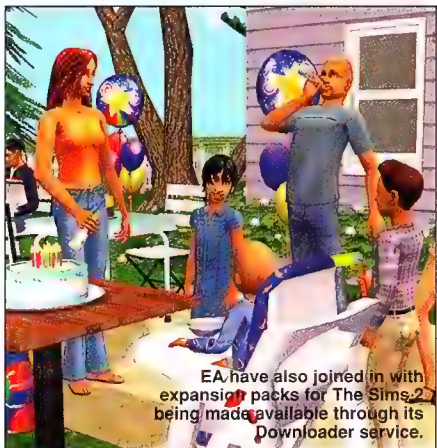
Online distribution is great... if you have a broadband connection. Like these guys.

Likewise, for Wii owners there's the Virtual Console service to look forward to. This will allow you to purchase and download classic NES, SNES and N64 games.

While it's probably going to be some time before we see the industry adopt online distribution *en masse*, it's clear that the movement is slowly starting to build up steam (groan-inducing pun intended). As for those of you who have minuscule download allowances, dial-up or a love for cardboard boxes and jewel cases... well, too bad.



Valve's Steam distribution service is now used by a number of popular developers.



EA have also joined in with expansion packs for The Sims 2 being made available through its Downloader service.

geekette

A girl's eye view of the game



Since shaking the dew off the lily in regards to the name of its new video game system, Nintendo has unfortunately found itself the subject of piddling criticism and crude remarks. No sooner did it break the seal on what should have been recognised as a brilliant marketing scheme than people started to take the piss.

Never shy to spend a penny when needed, Nintendo deserved to shake hands with the President for the thought, trouble and careful market research that would have gone into such a drastic image overhaul. As unbelievably apt and hip as the Revolution was, Nintendo rightly felt that the name could be adding undue pressure onto new gamers and in a golden shower of genius some advertising whiz has offered relief in the form of the more inviting and inclusive Wii.

Pronounced 'We', not only does the name change emphasise the welcoming nature of the system, but the two 'i's side by side are a visual representation of people gathering to play, and therefore cleverly reinforces the image of togetherness so lacking in other brands.

Coupled with the impressive name change, the new look console has thoroughly hosed the porcelain of the opposition. Finally, a product has hit the

market that appeals to the long neglected female demographic with its smooth lines, iMac feel and distinctive colour selection.

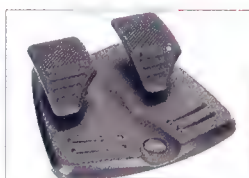
It's not just the painfully cool aesthetic and fun new title that has people talking; the controllers themselves stand out like yellow snow among their competitors. While still providing a challenge for the seasoned user, these unique instruments are essentially an extension of the arm. To be wielded in accordance to the movement, item or weapon they represent. Though some of the charades-like actions can present an element of the ridiculous, the premise is that of Buzz or Singstar, where the fun is not solely reserved for the user. Watching someone taking a slash through the air with their Wii controller can be just as entertaining as actually playing the game.

Personally, I agree with Nintendo's inspiring gameplay philosophy and since the very first leak of the name change, I have been practically wetting myself with excitement over the possibilities.

Viva la Revolution?
Nah... I think the Wii is number one!



Kate Inabinet is currently an Animator at Blue Tongue. Prior to games development, Kate spent six years in advertising and short film. She studied at the AIE in Canberra where she is still involved as a mentor for the Women in Games Pathway, presenting regularly at conferences on the topic.



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TALKINGHEAD

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Oblivion: Re-rated

Logan Booker can finally take off
his loincloth. Or not.

Can I still talk about Oblivion? Can I? Please? Now that the game DVD has descended into the depths of my laundry basket, nestled beside used underpants and 'dirty' tissues more questionable than busting in on your brother cleaning a single sock in the bathroom sink, you'd think my licence to write about Oblivion would be just as nestled.

Not so. The Entertainment Software Rating Board, or ESRB as it's known by kids these days, recently reclassified Oblivion from Teen to Mature – what would be an M to MA15+ here from the Office of Film and Literature Classification (OFLC) – again granting me permission to grace this page with Oblivion-related ramblings.

According to the ESRB, there are two reasons for the change. Firstly, the ESRB believes the M rating better represents the levels of blood and gore in the game and; secondly, the game contains nudity, a fact not disclosed to the ESRB during the initial ratings process. This is most likely due to the requirement of a third-party tool to reveal this nudity.

Now, this is Take 2 we're talking about, a publisher not at all unfamiliar with the whims of classification boards. Just last year it had to remove a sex mini-game (dubbed 'Hot Coffee') from GTA: San Andreas, also accessed via a third-party tool, and here in Australia deal with a re-rating of Manhunt to 'Refused Classification' a year after the game's on-sale. It would therefore be fair to say that Take 2 has a reasonable idea of what the ESRB and OFLC considers inappropriate. Well, at least it does now.

Which begs the question: Who's to blame?

Reclassification is a big deal, especially when a game has been out for a few months. Stickers have to be replaced, patches released and press releases written. Let's not forget all those confused parents who picked up a copy of Oblivion for their son or daughter with its safe and unimposing Teen rating. As we speak they are no doubt purifying their children with assorted religious paraphernalia, including crosses, holy water and fire.

Obviously you don't go throwing around new classifications unless you really have to, lest you enjoy the bitter taste of little Johnny's ashes on your tongue. I therefore implore you to entertain the idea that it was not the violence at all that forced the ESRB's hand, but the nudity. Considering its earlier

actions with San Andreas, the ESRB had little choice but to crack down on Oblivion, regardless of how tame its levels of nudity may be or how hard they are to access. When we take into account that Bethesda submitted a 60-page document to the ESRB outlining 'the explicit language, acts, and scenes in the game' (at least according to a statement released by the company following the ESRB's decision), it's difficult to believe the board made an oversight when rating the violence in the game, especially if we assume the ESRB keeps a close eye on all of Take 2's titles.

What I'm saying is that the ESRB acted in the interests of consistency rather than necessity. That doesn't necessarily mean it's the ESRB's fault Oblivion was re-rated – we just have the real reason it did so.

Let's go back to the statement made by Bethesda. According to it, 'some modders have used a third-party tool to hack into and modify an art archive file to make it possible to create a mesh for a partially nude (topless) female that they add into the game.'

Fine, I decided to track down the mod in question for, ah, research. And what did I find? This, in the mod's readme file:

'In the process of trying to create a nude skin for Oblivion, I found Bethesda had already done all the work for me. They just covered it up with underwear afterwards.'

You won't find a better plot thickener in a Dan Brown novel. On one hand our nefarious modder claims the nude skin was already there, while on the other Bethesda states it was added. So who's telling the truth?

Unfortunately for Bethesda, the conclusion is painfully simple. The guys who write these mods have huge egos – surely if our modder had gone to the trouble of making a nude skin, he would want to claim maximum kudos? So either we have an extremely modest modder or Bethesda is trying its best to cover up its mistake.

I'll let you decide.

Logan likes his Oblivion character in the nude.
logan@atomicmpc.com.au



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Release Date Q4 2006

Brothers in Arms: Hell's Highway

We were big fans of *Brothers in Arms: Road to Hill 30*. Sure, it made use of a setting that was fast becoming utterly mind-numbing, but its focus on tactics and simple but elegant command system really managed to set it apart from the pack. We're happy to report that a next-gen sequel is in the works at Gearbox Software.

Brothers in Arms: Hell's Highway will be set during Operation Market-Garden which, for those who don't know, was the Allies' ill-fated first attempt at crossing the Rhine River and entering Germany. Your opponents will consist of, predicatably, many Germans running, driving and flying at you in all manner of war contraptions. Except for when they're running, in which case they'll be in boots.

Like *Road to Hill 30*, *Hell's Highway* will place you in the grubby combat boots of Sergeant Matt Baker as he leads his platoon into battle. This time around, your men will be split into three separate squads – the assault team, the fire team and a third team, which, depending on the nature of the mission, will be made up of either a heavy weapons crew or radio operator.

If you have a radio operator in tow, you'll be able to request artillery strikes on enemy positions. On the other hand, if you have a machinegun crew you'll be able to order them to setup their weapon and cover you as you advance. The key to success will be making full use of everything you're provided.

All of the action in *Hell's Highway* will take place on a single map. Just so you have some idea of how big it is, picture a map from the original game – according to Gearbox Software, the map you're thinking of is roughly equivalent to two city blocks. Cool.



GAME INFO Platform PC, Xbox 360, PS3 Publisher Ubisoft Developer Gearbox Website www.biagame.com

Release Date 2007

World in Conflict

2007 is shaping up to be one hell of a year for strategy fiends, with both the long-awaited *Command & Conquer 3: Tiberium Wars* and *Supreme Commander* in the pipeline. Now the desk chair generals out there have a third game to drool over – *World in Conflict*.

The storyline behind *World in Conflict* is particularly interesting. Penned by author Larry Bond, it presents a 'what if' scenario that sees Soviet Russia invading the United States. Although the plot may sound creepily reminiscent of *Red Alert 2*, Massive Entertainment is hoping to do something that's quite different.

For starters, *World in Conflict* won't feature any base construction, tech trees or resource gathering. Instead, at the start of each battle you'll be able to purchase units using points that slowly regenerate over time. You're also given the choice of specialising in one of four areas – infantry, armour, aerial or support forces. Like a game of Scissors, Paper, Rock, each is strong against one or more areas and weak opposing others.

World in Conflict's missions will be more akin to a game of *UT2004* *Onslaught* or *Battlefield* than anything else, tasking you with capturing strategic locations dotted across the map in a specific order. As you'd imagine, capturing a location gives you a heap of bonus points which can be used to purchase more units or fancy pants stuff like nuclear strikes, or more defensive abilities like anti-air attacks.

Teamplay is vitally important, and co-operation between players using different arms will decide the tide of battle. For this reason, *World in Conflict* will show its true colours in a multiplayer setting.

Oh and as you may have noticed, *World in Conflict* is one awfully pretty game. Seriously, the level of detail, particle effects and sheer level of destructibility offered by the environment is practically *erotic*. We can't wait to embrace our new communist overlords.



GAME INFO Platform PC Publisher Sierra Developer Massive Entertainment Website www.worldinconflict.com

Release Date August 2006

Dungeon Siege 2: Broken World

For all you folks who just can't seem to get enough of Gas Powered Games' Dungeon Siege 2, you're in luck. The stalwart developer, led by Chris Taylor of Total Annihilation fame has set out to deliver an expansion, Broken World, to your front door. Or at least, the shelf of your local games proprietor.

Following on from the original game, the world of Aranna is once again in peril, this time from the Dark Wizard. It's up to you and your trusty band of adventurers to track this nasty fellow down and cut him down, or shoot him with an arrow or scorch him with a fireball.

Broken World adds a fourth act for you to roleplay through. According to Gas Powered, players can expect around 10 hours of adventuring through the main quest and an extra five hours of side quests, totalling 15 hours of play if you decide to search every nook and cranny. You'll also be able to pick between two new modes of play, Mercenary and Elite, further extending the fun.

Populating the expansion is 40-odd monsters for you to do battle with, along with an undisclosed number of new armour and weapons. GPG has also said new options will be available to enchant your items to make them even more formidable and shiny.

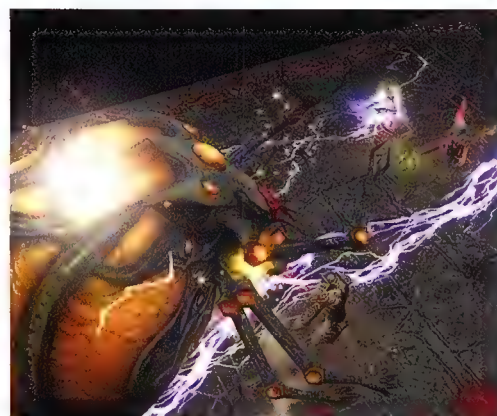
If new gear and creatures are not enough to get you excited, then two new character classes should. These classes are designed to wield both weapons and magic like they're a third arm, or a second arm with a third arm attached to it. These classes of course will feature their own brand of abilities for you to try out.

Talking about new abilities, additional powers and spells have made their way into the expansion, so be on the lookout for bigger explosions and the like – no doubt GPG will make extensive use of the game's fantastic particle effects engine to bring these new powers to life.

Aranna has also sprouted by unknown means a few new races, including dwarves. So, if you've felt inclined to play the shortest race of them all as you conquer the game's many opponents, or perhaps felt like growing a really sweet beard, you can. Along with the dwarves, GPG has plonked in some new pets for the more cuddly players.

New reagent recipes will also make an appearance, which you can toss together to make useful items, even unique ones, to whack things with. Unfortunately we don't have any more details yet, so you'll just have to imagine it.

Publisher 2K Games has set July/August of this year as the release date, so you won't have to wait very long at all to play this solid-looking expansion.



GAME INFO Platform PC Publisher 2K Games Developer Gas Powered Games Website brokenworld.gaspowered.com

FUTURE

Logan Booker and Chris Taylor interrogate DiCE's Marcus Nilsson on Battlefield 2142 using snowballs, mechstriders and fricken' laser beams.

Science fiction has had a tough run of late on almost every medium. We've lost staples, like *Star Trek* after the last movie bombed, and the series *Enterprise* failed to invigorate interest. *Firefly*, a fresh-looking Joss Whedon TV production with the pedigree of *Buffy the Vampire Slayer* behind it, only managed to scrape together a season and the sci-fi coming out of Hollywood – *Aeon Flux*, *Nightwatch*, *The Island* – is doing the genre more harm than good.

It seems the video games industry is where the genre has enjoyed a lot of its success in recent times, perhaps the only format to surpass it being literature (which has always owned sci-fi and fantasy). We're all familiar with the allure of experiencing the future, and game developers have long recognised that.

So while some may question the curious decision to release another Battlefield game just a year after the last, developer Digital Illusions CE – or DiCE as it's often called – is very in tune with the desires of its player base. It's had enough of the world wars and even modern conflict has had its day. With nowhere but the future to go, DiCE has retrofitted the Battlefield 2 engine for the next instalment in the series – Battlefield 2142.

FACTION ACTION

The team at DiCE would have found itself in a sticky predicament as it stared at the blank Word document destined to become the design brief for BF2142. For one, it couldn't directly reference the past or the present. Sure, there's plenty of inspiration to draw on, but the look and feel of the game was primarily going to be formed in the imaginations of the developers. Although inclusions like lasers and robots were obvious, how far into the future did DiCE wish to delve?

As you may have already guessed, the game is set in 2142 and, according to senior producer Marcus Nilsson, Earth is experiencing a 'cataclysmic' ice age – one we can assume is a result of humanity's abuse

of the environment. 'The ice has been spreading across the world for decades, with the remaining habitable land only able to support 3 billion of the 10 billion people in the world,' explains Nilsson. 'War is inevitable and mankind fights for survival.'

Unlike BF2, BF2142 will feature a bit more variety in the map department. According to Nilsson, we can expect 10 new maps that will take into account the encroaching ice age.

'Players will be able to play the game in settings varying from urban environments and ruins of old cities, to open, snowy and icy landscapes. Most of the action will take place in Northern Africa where most of the remaining population is now living,' he says.

Like previous Battlefield games, players can choose from two factions – in this case, the American-European Alliance or the Pan-Asian Coalition. There are other minor factions, or scabbling for precious unfrozen land mass, but it is these two that are the most prominent – and well-equipped. It's survival of the fittest at its best, down to whoever has the biggest EMP grenade, mechanised walker or spaceship.

BIT OF KIT

'All vehicles, weapons and environments have been carefully designed to have them feel like they fit into the year 2142. The key for us is that Battlefield 2142 portrays a believable future and a realistic vision of what the world could look like,' explains Nilsson.

With that in mind, the game maintains a futuristic feel without tossing in a crazy mix of alien-like or esoteric devices. Helicopters and jets look like you would expect, except with a slick, hi-tech touch to blend them into the game. Classic weapons like machine guns and sniper rifles work like they normally would, with the exception of the odd laser bolt instead of a shell.

Tanks and APC, of course, are there and a few new things are added to the mix. For example – mechs. These giant walking robots will hold as

Mechs are new additions to the game. These giant walking robots will hold as much interest as 'copters did in the first release of the Desert Combat mod for BF1942.



The game is set in 2142 and Earth is experiencing a 'cataclysmic' ice age because of humanity's abuse of the environment.

WARS

ENGINE ROOM





Weapons have been carefully designed to have them feel like they fit into the year 2142.



Battlefield 2142 portrays a believable future and a realistic vision of what the world could look like, explains Milsson.

much interest as 'copters did in the first release of the Desert Combat mod for BF1942. Certain vehicles also allow players to 'eject' from them, opening a fresh way of deploying troops strategically.

'The APC vehicle will have what we call a "man-cannon". This cocoons the player in a pod and shoots it high up into the air, where you can gain tactical advantages. I'm sure some people will use it to try and take out air vehicles too,' says Milsson.

Speaking of men, it's the troops that are the important part of the Battlefield series. And, like previous titles, players can select 'kits' – weapon and equipment loadouts that define your role in the battle. BF2142 however goes a step further and allows customisation of these standard loadouts.

'We have gone down to four kits, but at the same time made them more diverse. You can do more with less, so to say. Use your tools wisely and you never stand without possibility to come out on top. As in previous Battlefield games, the classes will complement each other and you will be rewarded for team play,' explains Milsson.

To expand a little – you can change your weapon and equipment selection to a limited degree. For example, while the Recon kit is the only one that comes with a cloaking device, you can add a few extra abilities to make your scout that much better. Additional abilities, and weapons, can be unlocked – just like BF2. According to the most recent information available for the game, there are some 40 unlockables available to players.

TITANIC GAMING

As a futuristic game, BF2142 would not be complete without gameplay to match. DICE has taken a long hard look at the original gameplay in its previous titles and, while keeping the same Battlefield feel, has added



some new elements to entice players from the sandy arenas of Middle East and the mangroves of Guantanamo Bay.

'You will also see changes and additions to the commander mode, the online matchmaking service and to gameplay. Nothing that has been included in the previous Battlefield games has been left unchallenged.'

Enter 'Titan' Mode, a new game type that writes a new page in the book on FPS multiplayer. Take 64 players, two big ships a side, a bunch of missile silos as capture points and MP so frenetic it makes the 10 tasks of Hercules look like errands on grandma's to-do list.

In Titan Mode, each side has its own mammoth ship – a Titan – from which troops are deployed. The goal – to capture missile silos on the ground to attack and lower the defences of these ships. When sufficiently weakened, you can board, do your nasty business and win the game. Combat occurs pretty much everywhere – on land, in the air and on each Titan. It is by far the most exciting new multiplayer game mode to present itself in a first person shooter.

BACK TO THE FUTURE

DiCE has a fine-looking engine from BF2, and it took nanoseconds for the developers to pick up and transform the tech from a modern-day to a hi-tech FPS. 'We feel that the BF2 engine is still a great piece of technology that we're very proud of. Of course, we're evolving it all the time, but the key for us is that technology is only worthwhile if it advances gameplay,' says Milsson.

'The prettiest game in the world is just a tech demo if it doesn't play well. The advantage for us using the BF2 engine is that we know it works, we can make it still look incredible, and it allows us to focus on gameplay more than anything else.'

While the core renderer has remain unchanged, DiCE has added a few extra effects and performance tweaks to bring the technology up to scratch. This includes improved particle effects (obviously to make those futuristic weapons look the part); additional and improved weather effects; better lighting for indoor areas and the ability to render undergrowth and trees. Like BF2, it will support normal maps, global illumination, hemispherical lighting and all the rest.

HOW LONG?

Lucky for us, Battlefield 2142 is not far off at all. According to publisher EA, we can expect a late 2006 release. In the meantime, there's no reason to stop playing Battlefield 2. Just prepare yourself for the best sci-fi experience short of an Isaac Asimov novel.



A few extra effects and performance tweaks have been added to bring the technology up to scratch – such as improved particle effects.



Although there are only four troop 'kits' you can customise a number of abilities to give yourself a unique advantage.



It is by far the most exciting new multiplayer game mode to present itself in a first person shooter.

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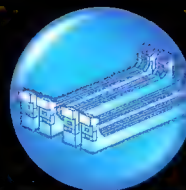
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TECHNOLOGY

In *Condemned*, being a smack addict has nothing to do with drugs.

Condemned: Criminal Origins

Logan Booker wants to hide in a hole somewhere.

Scary does *Condemned* about as much justice as 'mediocre' would for Daikatana. This game *will* have you scraping the skid-marks from the insides of jeans – imagine *FEAR*, but with more fear or Resident Evil with about billion extra helpings of evil. This isn't unexpected as *Condemned* uses the same engine as *FEAR* and comes from the same developer, Monolith.

As forensic investigator Ethan Thomas, it's up to you to trudge the poor bugger through all kinds of run-down, dark and creepy areas – everything from decommissioned buildings and sewers to basements and houses – collecting evidence with an array of high-tech tools including digital cameras, odour detectors and black lights. Once you've collected the correct blood stain, or taken a photo of the right body, the evidence is sent via mobile to a crime lab, where you're given a summary on your finds and a hint on how to proceed. Along with nudging the player in the right direction, this mechanic helps to further the story – one that takes little time descending into the macabre and the twisted.

But that's the easy part of the game.

For a forensic investigator, Ethan doesn't spend much of his time gathering clues, instead thwacking junkies, degenerates and crazy old men with everything from 2-by-4s and gas pipes to sledgehammers and street signs. Ethan can grab pretty much anything lying around and use it as a weapon – as can his enemies. To even up the odds (the city in which the game is set contains more violent individuals than a Victorian police station) Ethan gets a TASER that temporarily stuns or, with enough shocks, kills an opponent. It takes a few seconds to recharge so intelligent use is advised.

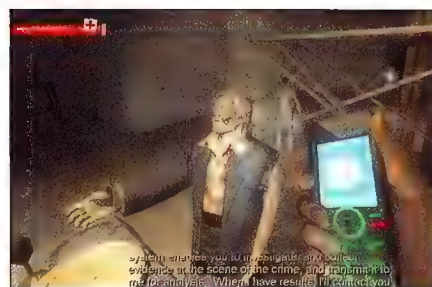
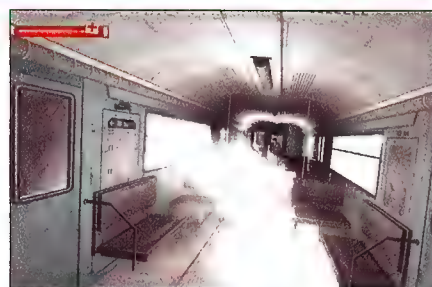
There are guns of course, but they're far and few between and, for some reason, Ethan was never taught how to reload as a cadet. So the ammunition you find in each weapon is all you get and once you use it, the gun is useless. To aid you in rationing out your limited supplies, you can switch to melee mode and brain people with the butt.

Hence the focus is on melee combat and as such, Ethan can block and kick to defend and defeat his assailants. Each weapon has four ratings – damage, speed, block and reach. However, the only two that seem to count are damage and speed; you can block a sledge with something as tiny as the butt of a pistol and the fighting is so close quarters that reach is never an issue or a usable mechanic.

When Ethan gets hit, he takes it like any normal person would – badly. Blood smears his vision, he staggers back and a series of well-placed blows can quickly take him down. Blocking really makes a difference, allowing for a counterattack as your opponent regains their balance and, if you feel inclined, you can steal weapons off enemies during this time. The AI is more than capable of rearming itself, so it's wise not to leave loaded weapons lying around.

All this exciting gameplay, however, is tempered by an almost total lack of lighting. Think *Doom 3*, except your torch can be used while you have a weapon and it never runs out of power. The levels are also uninspired and other than the evidence collecting, there isn't much to break up the game.

Regardless, *Condemned: Criminal Origins* comes highly recommended. Fans of *FEAR* and the survival horror genre will lap it up.



PC

Developer Monolith
Publisher Sega/THQ
Website condemnedgame.com

Recommended
2.5GHz P4/Athlon 64; 1GB RAM;
256MB DirectX 9.0c card

VERDICT

Brutal melee combat; scary as your naked mum; excellent atmosphere and graphics. ✓

Repetitive gameplay; some AI problems; bland levels; dark as hell. ✗

SCORE
8.0
OUT OF 10



Heroes of Might and Magic V

Maurice 'moz' Ford likes his adventuring bright, beautiful and one step at a time.

Turn based strategy games are a bit of a niche market, wedged somewhere between the *Nikki Webster Activity Centre* and *Paint with Pooh Bear*. Many consider them to be old hat, preferring the fast paced action of real time strategy.

But if one were to take the time to look, gold can be found. Indeed, one such nugget from the past is *Heroes of Might and Magic III*. After nearly seven years and countless hours of gameplay, it's still a classic time waster. Yes, I know that the graphics are a tad dated, but it's

the *gameplay* that makes it. If you are unfamiliar with the series, *Heroes of Might and Magic* (HOMM) is a typical fantasy strategy game.

The fact that it is turn based will probably cause many hardcore gamers to snub it. However, good turn based games allow a more contemplative and thoughtful gameplay to take place, a remarkably pleasant change compared to the hectic cut throat of RTS. Consider it more like a chess game than a frantic race for victory. In 2002, HOMM IV was released to an eager fanbase.

Although reviews rated it highly, many gamers felt that developers 3DO had somehow lost the feel of the game. Fast forward to now and we have a new developer and a new game. Ubisoft is releasing the long awaited HOMM V.

If you're a fan of HOMM III, you're in for a pleasant surprise. HOMM V is essentially the same game. It differs enough from HOMM III to make it an exciting journey of discovery as you learn what helps and hinders your campaign. Graphics have understandably been upgraded with the entire game taking advantage of modern graphics processors. Landscapes are lush and beautiful and set at maximum can really tax a high end system.

HOMM V puts you in charge of one of six factions, all with their own strengths and weaknesses. In order to mount a successful campaign you'll have to groom and develop at least one hero, build your castle, explore the land, manage resources and assemble an army of creatures that would make Dr. Moreau's efforts look positively pathetic.

Like any true strategy game worth its salt, learning to balance all of these skills is half the fun. Your strategies will differ wildly depending on the missions you embark upon or the foes that you face. HOMM V manages to provide enough depth and variation throughout its lengthy campaign mode to satisfy even the most demanding of gamers. In addition to the campaign, there are single player missions and the all important multiplayer option, all of which adds legs to an already great game.

Hero development is very restricted compared to traditional RPGs, but as the focus of the game is more towards overall tactics, it doesn't detract from the experience. When your Hero levels up you will be given a choice of new skills, with each acquired skill giving you a selection of 'abilities'. Unfortunately, there's a certain amount of luck involved with this as you can only choose from a limited selection each time.

The castles are something special. Full 3D masterpieces that tower into the sky and defy your sensibilities. You'll never get lost because a great set of menus allow you to easily navigate. A colour-coded building map enhances and simplifies construction by allowing you to plan the optimum build path with what resources you have at hand.

Combat has undergone a similar makeover, with the ubiquitous 3D imagery adding some eye candy to the battleground. You can make the most of this using the rotating view and zooming in on the action. Every hero gets a handy tactics mode at the start of a battle so you can arrange your units into optimum position. The turn based combat is a complex affair with luck and morale affecting the attack order of units, which is conveniently listed at the bottom of the screen. There are combat animations, but these are basic and largely useless.





Thankfully, they can be turned off using the extensive options page. Other general highlights include hotkeys for just about everything, although the excellent menus make these largely redundant. There are cut scenes to keep the storylines flowing and although they are uninspiring, they do add to the overall experience. Keep your eyes open for the odd random spot of humour!

Especially nice is being able to minimise the game and multitask. Listen to MP3s, browse the Internet and chat on MSN mid game. Try doing that with BF2! The game is not perfect, with a

few niggling things that will get on your nerves. Top of the list is the dreadful music. I've heard some bad soundtracks before, but this one takes the cake. Another audio annoyance is the sound that is produced when the mouse pointer is on an interactive area. Moving the mouse around the screen produces a sound like an insane dwarf on acid playing the bongos. Grrr!

Overall though it's an excellent game. A truly worthy addition to the prestigious HOMM lineage. If Ubisoft mimics 3DO and produces a mass of quality add on packs, it will have a sure fire winner on its hands.



PC

Developer **Nival Interactive**
Publisher **Ubisoft**
Website mightandmagic.com/HeroesV/uk/home.php

Recommended **P4/Athlon 1.5GHz;**
512meg RAM; 128 MB AGP GeForce4
Ti4200 / RADEON 8500 video card

VERDICT

Lush graphics; requires more thought than your average RTS.

Steep learning curve; dreadful soundtrack; too much luck in choosing Heroes skills.





Developer **PAM**
 Publisher **2K Sports**
 Website 2ksports.com/games/topspin2
 Players **1-4**
 Other platforms **GBA; Nintendo DS**

VERDICT



The satisfaction of getting better at it; hard to imagine better control method.



Authentic Sharapova grunting every shot - we just don't need it thank you.



You need balls to leap like this.



After defeating the naysayers who said that there could never be a better tennis game than Virtua Tennis on Dreamcast, Top Spin went on to become a true classic. It was an essential part of any serious Xbox gamer's collection and thrived on Live for many years after its release. Big tennis shoes indeed then for the sequel to step into.

We were all very surprised here when Top Spin 2 wasn't a 360 launch title. Anyway, it's here and it is just a typical sports game evolution, which is no bad thing at all.

For newcomers to the Top Spin way, it takes about a minute to get down with the way the player is controlled and shots are placed. A few minutes after that and you're really in the groove and everything is instinctive and the pace and satisfaction picks up. Just the way a great game should be. The left joystick moves your player around the court and determines aim. Support for the D-pad has been ditched which will annoy some, but analog's the way of the future, haven't you heard?

The trick to Top Spin is to time when you're done moving and have shifted to shot placement. Each button does a different style of shot and you can be a legend by supplementing basic shots with 'risk shot' or 'advanced shot' boost. It works as a power bar during play that's activated with the shoulder buttons. Get the timing of the fast moving power bar right in the middle of a rally and BAM you'll plant

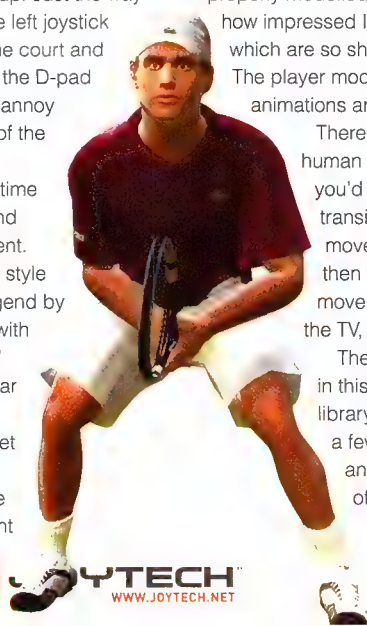
a winner. Muck it up and the ball goes into the net or the crowd.

It's this headroom for mastery that gives Top Spin its legs and separates the real pros from the beginners. Top Spin 2 is already going off on Live and it's online that you'll encounter some seriously good players. They'll use power shots almost every time and it's humbling, but motivating. Being a two-player game adds much to the social aspect of Live. Many friendships have been formed on these virtual courts.

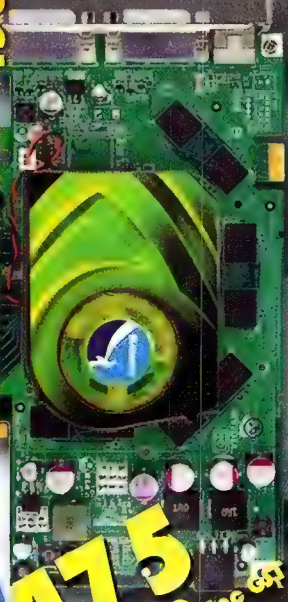
Apart from the addition of new players, including a disturbingly grunty Maria Sharapova, the new game gets sexy high res textures and an upped poly budget for the 360. The court surfaces look wonderful, dry sun-cracked clay never looked so dusty. The stands are full of properly modelled 3D fans and I was surprised how impressed I was with the tennis racquets, which are so shiny and expensive looking. The player models are only passable but the animations are superb.

There's still something not-quite-human about their movements, but you'd be hard pressed to spot any transition between animated player movements and every now and then your player will pull a legend move that'll have you whooping at the TV, being what it's all about.

There's years worth of gaming in this box. There's already a big library of great 360 games, but only a few could be called 'essential' and Top Spin 2 is certainly one of them.

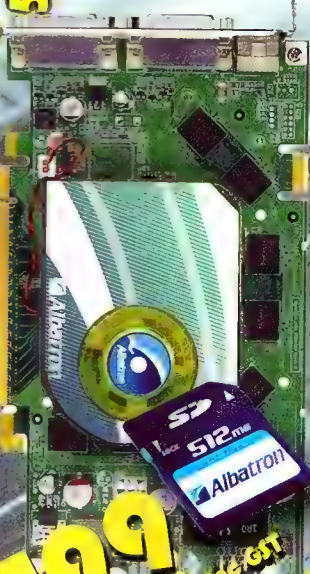


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INTERACTIVE

ATOMIC'S GUIDE TO THE COMMUNITY.
READ, WRITE AND CONTRIBUTE!

I've come to realise a few things about Atomicans over the years. For starters, they have a habit of meeting up and getting righteously trashed on a regular basis (www.atomicmpc.com.au/forums.asp?s=1&c=5). Secondly, when they get bored they love to share nauseating amounts of personal information about their body hair (www.atomicmpc.com.au/forums.asp?s=1&c=1&t=68930). And finally, they know *everything*. Seriously, no matter what you require assistance with – be it choosing a Linux distro, pinball machine restoration or your manly chest hair – there's bound to be an Atomican who's willing to help you out. Seeing as this magazine is more about computing than it is looking like the mantastic Mr. Hasselhoff (all credit for that term goes to forum member Gir), I think it's better for everyone concerned if I focus on the technical stuff.

Regular readers should already be familiar with Daniel Rutter's Input Output section. Dan's a prime example of a person who knows way too much about computers to still be considered even remotely sane. If you have a tech problem that's bugging you (mind the pun), fire off an email to him at io@atomicmpc.com.au. If your question is particularly interesting, you might just win a lovely Logitech G5 mouse.

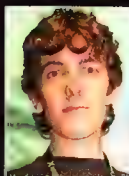
You can also get help on the forums. Dedicated Atomicans have poured countless hours into writing tutorials on all sorts of topics, from wireless network security (www.atomicmpc.com.au/forums.asp?s=2&c=22&t=5) to installing Linux for the first time (www.atomicmpc.com.au/forums.asp?s=2&c=16&t=1625). If you can't find a guide that solves your problem, feel free to create a thread. Heck, there's even a guide for that (www.atomicmpc.com.au/forums.asp?s=2&c=8&t=15955).

The ever-expanding knowledge base of *Atomic* isn't just limited to the computers. The two gaming sections (www.atomicmpc.com.au/forums.asp?s=3&c=12 and www.atomicmpc.com.au/forums.asp?s=3&c=13) are home to dozens of knowledgeable souls who are more than capable of answering any game-related questions you may have. Just don't tell the console crew that you find standard def gaming acceptable.

And finally, I'd just like to remind you all that you're able to nominate people for our new Avatar section. Since *issue 64*, I've been catching up with a different Atomicans to find out their views on optical drives, men in tutus and being a forum moderator. If you think someone you know is deserving of being asked about their thoughts on men who shave their chests, I've put together a list of guidelines and instructions at www.atomicmpc.com.au/forums.asp?s=1&c=3&t=2298.

Personally, I think he should have waxed.

Chris waxes and wanes.
interactive@atomicmpc.com.au



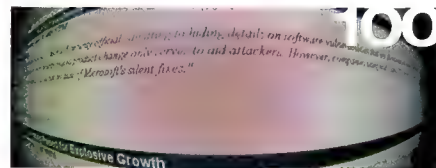
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this month



Culture Shock

Movies, DVDs and your soon-to-be favourite TV shows reviewed.



Input Output

Dan Rutter answers questions on LCDs and CRTs and your cat's licking problem.



Competitions

You like to win. We like to give stuff away. So make us happy and join the competitions!



Artomic

Adobe wants to give you stuff. Give it a go and submit some great work!



Avatar

Christopher Taylor finds out why Salty Peanut is salty and...um...peanuty.



Websight

Get the latest status report on the community forums and know why Sponge Bob is spongy.



Fallout

Logan Booker explores a future not too far away... wearing a foil hat.

CULTURESHOCK

EVERYTHING YOU NEED TO KNOW ABOUT FILM, MUSIC AND LITERATURE.



Huff: The Complete First Season

DVD Starring Hank Azaria, Oliver Platt Website: www.huff.com Distributor: Sony Pictures Home Entertainment

We love Showtime, we really do. In recent years, it's managed to establish itself as the undeniable king of the quirky drama genre. Being such big fans of its work, we had very high expectations for *Huff*.

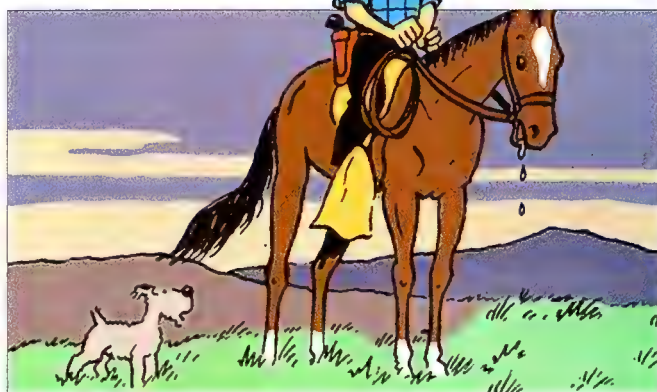
Huff tells the story of Dr. Craig Huffstodt, a loving family man and psychiatrist. Poor Craig has just had the misfortune of watching one of his patients commit suicide during a therapy session and, as you'd imagine, is more than a little upset. In shock from what just happened, he begins to question just how much he really is helping people – both at work and at home. Of course, this wouldn't be a quirky drama without a cast of kooky but thoroughly likeable characters. Here, *Huff* delivers spectacularly – Craig's mother Izzy, wife Beth, rapidly maturing son Byrd, schizophrenic brother Teddy, devoted Christian secretary Paula and homeless Hungarian friend are all wonderful characters who are far deeper than you'd imagine. Lara Flynn Boyle gives surprisingly convincing performance as the obsessive, bipolar patient Melody. Oliver Platt is also worthy of a mention for his role as Russell Tupper, Craig's oversexed, coke-addicted lawyer and best friend. His chaotic behaviour and messed up worldview serves as a stark contrast to Craig's selflessness and professional attitude.

In terms of themes and style, *Huff* is best described as a mixture of *Garden State*, *American Beauty*, *Weeds*, *The Sopranos* and *Six Feet Under*. While the concept behind it isn't exactly original, the writing and acting are consistently excellent. The balance of humour and serious drama is also perfect. This is a show that rapidly alternates between being very dark and hilarious and incredibly sad and profound.

If *American Beauty* and *Garden State* bored you to tears, this probably isn't for you. For the rest of you, though, this is an excellent series that shouldn't be missed. Bless those talented people at Showtime.

CT

score **9.0** OUT OF 10



Adventures of Tintin

DVD Starring Colin O'Meara, David Fox Website: www.madman.com.au Distributor: Madman RRP: \$89.95

Taking a wild stab in the dark, we'd guess that absolutely every kid in the whole wide world grew up with Tintin comic books. The big format books were strangely acceptable to parents, when Batman wasn't. There were 21 books in the series and the number you owned as a kid was an accurate yardstick of how much your parents loved you. I knew a kid that had every single Tintin book, *plus* every Asterix book, *and* the obscure but supremely cool Lucky Luke series. His parents must have been *billionaires*.

Being classics, over the years proper animated telly shows were produced of all the Tintin adventures, and now they're out in a DVD box set. Grown-ups will get quite the nostalgia rush watching these wonderful stories. Tintin may be a little bloke with a poofy haircut and a dog called Snowy, but by golly when he gets his teeth into something he's a tenacious blighter. Tintin's a newspaper reporter, but end up in all sorts of fixes, like being stuck on the Moon or winding through the caverns of a lost Inca temple. The ensemble cast included the gruff Captain Haddock, the buffoonish Thomson Twins and the daffy Professor Calculus.

Other than being a bit dated, your kids will still enjoy Tintin as much as you once did. Sit them in front of a Tintin adventure and wear them off WWF Smackdown.

Future generations will thank you for it.

BM

score **8.0** OUT OF 10

Win Tintin on DVD – Volumes 1, 2 & 3!

Well, Tintin is great, and so do the nice folks over at Madman. To coincide with the release of the complete series on DVD, Madman works to give away volumes 1, 2 and 3 (and 6!) to one lucky reader. All you have to do is visit www.atomicmpc.com.au/competitions, click the Tintin link and answer the following question to be in with a chance.

Q: Beginning with 'M', what is the name of the hall in which Captain Haddock resides?

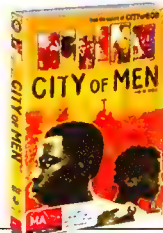


CRITICSCORNER

DVD City of Men: Seasons 1 & 2

Starring: Darlan Cunha; Douglas Silva
Distributor: Madman Films
When it was first aired, this series – which follows the life and times of two teenage boys growing up in the slums of Rio – had 35 million Brazilians glued to their television screens. Check it out to find out why.

CT



CINEMA The Da Vinci Code

Starring: Tom Hanks, Audrey Tautou. **Distributor:** Columbia Pictures
More fun than being slowly sodomised by a bamboo shoot, but not as entertaining as being shot in the face with a flame thrower, the film version of the best-selling book fails to do anything that isn't painful for the viewer. Commendably true to the novel, but sterile.

LB



PSP Splinter Cell: Essentials

Distributor: Ubisoft
If you can't wait for Double Agent and own a PSP then check this tiny title out. Help Sam Fisher stay on the right side of the law while making new friends with the criminal elite as you infiltrate a deadly terrorist group known as the Third Echelon. Keep your wits – and weapons – about you.

LB



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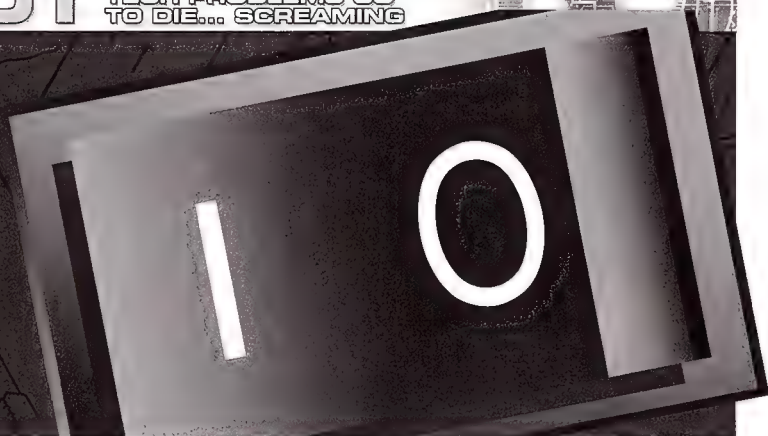


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I Could you please explain these RAM settings?

My ASUS K8VSE Deluxe Socket 754 mobo BIOS has, under 'ECC Configuration':

DRAM ECC Enable
MCA DRAM ECC Logging
ECC Chip Kill

DRAM Scrub Redirect

The options for these settings are all 'Enable/Disable'.

Then there's:

DRAM BG Scrub
L2 Cache BG Scrub
Data Cache BG Scrub

These options have settings ranging from 40ns to 655.4us.

What should they be set to? Do you have to have ECC RAM to make use of them?

than the second, too; individual flipped-bit errors that actually matter usually cause some other obvious error, and don't just result in insidious bad data being written to disk.

Incidentally, it's perfectly possible for RAM errors to not matter. An error in a piece of memory that's not being used for anything, or that's being used for something trivial (Winamp's data buffer, say), won't do any harm.

Now, assuming you've got ECC (Error-Correcting Code) RAM, the ECC Enable setting is what turns its basic functions on and off; with ECC off, the memory will behave like ordinary non-ECC RAM, which is faster than ECC.

The DRAM ECC Logging thing lets the BIOS write its own event log to disk for RAM errors.

The marvellously named ECC Chip Kill slows the RAM down even more, but allows multi-bit error correction.

Sean

The 'Scrub' stuff allows corrected values to be written back to the RAM – which, yes, slows it down further. 'Scrub Redirect' writes the corrected values as soon as the error's detected; the 'BG Scrubs' all do it when the memory's idle instead (in the 'BackGround'), and the timing values determine how often.

If you need ECC memory and have therefore bought some, you probably want all of these options on. Unless you're restarting your

IOOTM wins a Logitech G5!

This is the mouse all other mice bow down to and accept as their one, and only, leader.



important server and intend to play some maximum-frame-rate FEAR on it, or something, in which case you should turn ECC off entirely for the duration.

Iconiconiconiconicon

I I usually have about a zillion messages open in Eudora, while I wait for workmates and clients to be fired or die, and absolve me from responsibility for replying to them. Keeping the messages open makes them think I still care.

The other day, though, I tried to open Eudora when I was running a few other memory-hungry apps and it just went 'bing' and crashed. When I closed the other apps and ran Eudora again it started from scratch – now no messages or mailboxes are open.

This is terrible! I look as if I'm doing as little work as I really am!

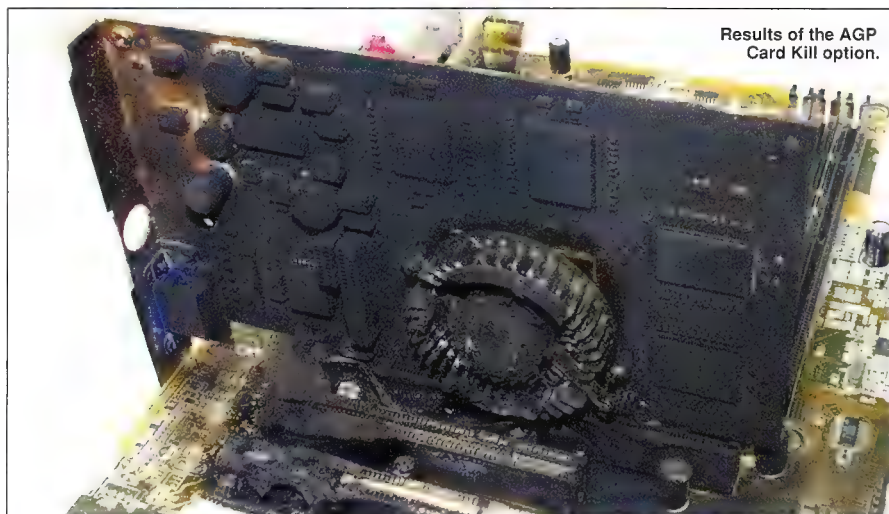
I have backups. I tried running Eudora from one of them, and it worked fine except for complaining a bit about being in the wrong place. There was my big line of little message icons again. But the most recent backup is from a week ago, and since then I've received important porno spam that I don't want to lose.

Is there an index file that stores the open messages, or something? Is it a registry thing?

Wade

O Yes, there's such a file. No, it's not a registry thing. Eudora is one of those old-style apps that keeps everything in a cryptic config file, eudora.ini, in the program directory. Restore eudora.ini from a backup, and your clutter and slow Eudora startup time will be back, without any new messages being lost (though they won't, of course, be open).

Results of the AGP Card Kill option.

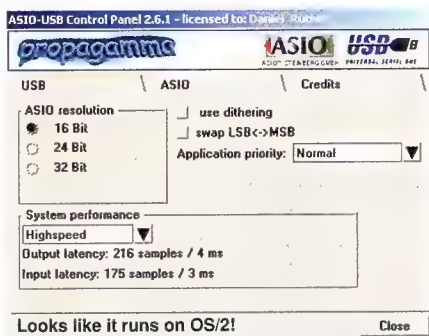


Wait for it, wait for it...

I've been setting up a bedroom studio based around my Athlon 64 X2 WinXP gaming machine, with the absolute minimum hardware (buying the computer emptied my bank account). I don't need multitrack in or out, since I'm using softsynths for almost everything but vocals, and I've got a little USB line-in thing that works fine whenever I need to record something. I'm using a USB DAC and a home theatre amplifier as my audio output system, which works great (for DVDs, too!), except when I want to play something into the sequencer (via, of course, my USB MIDI interface). Then, and only then, it becomes obvious to me that the USB audio output is laggy. I've read up on latency, and I kind of understand why it happens, but it seems kinda stupid that my super-computer can't output audio less than 16 milliseconds or so after MIDI tells it to play a note. That's too much lag to monitor properly.

There are 'pro' sound cards with low latency ASIO drivers, and some of them are almost affordable. They all have multiple ins and outs and other extras that I don't need, but I guess I'm stuck with them. Which one should I get? Or should I get some (gasp) Creative card with even more bells and whistles that costs less and is also supposed to be low latency?

Stefan



Rejoice – your salvation lies not in hardware, but in more software. But don't rejoice too much, because as far as I know there's no free software that'll solve your problem. Go to www.usb-audio.com, and download the demo version of their low latency USB audio driver. It goes 'bing' every 30 seconds but is otherwise fully functional, and it allows the lightning latency you need. Down to a screaming (figuratively speaking) four milliseconds for 44.1kHz audio, actually, as opposed to the buzzing (literally speaking) 14ms you've probably already experienced.

The USBAudio ASIO driver runs in kernel mode, so you'd expect it to perform amateur open heart surgery on Windows, but the installer is actually extremely civilised – you don't even have to reboot. And yes, if you decide it's not for you, you can uninstall it (well, I could, anyway) without ending up with 103 identical broken sound cards in Device Manager. The downside? The full version of the driver costs 44 euros. Still cheaper than a new sound card, though.

I/O OF THE MONTH

Pixel ping

This should really be a pretty simple question. Basically, these days you can get LCDs with response times of 4ms (in the case of the Viewsonic VX922, a claimed grey-to-grey of 2ms), much faster than the old standard of 16ms. However, I was wondering just how much these newer response times are pure hype.

I mean, ignoring the black to white/grey to grey standard measurement stuff that's being used to fudge the results a little, the reason I ask is that a standard CRT (in a disgusting office block where the company hates your eyes) refreshes at 60Hz, yes? So it would have a physical 'response time' of 1/60, or 16.6ms. Now, one can't see ghosting at all on a CRT, yet would-be gamers insist that a 16ms LCD will show noticeable ghosting. I'd assume this would simply be down to the fact that on a CRT the entire picture is refreshed, as opposed to only a set of moving pixels on an LCD?

I guess the actual question here is whether you can actually compare a response time to refresh time in this manner, or if I'm barking up the wrong tree?

Simon

As you say, CRTs redraw the entire screen every time they refresh; the electron beam zips over the phosphors and draws a whole new picture, even if that picture's largely or entirely the same as the old one.

In the olden days, a lot of CRTs had high enough 'persistence' that they actually did ghost, very badly. You can see this effect clearly on an Apple II green screen with text scrolling on it, for instance. Persistence is how long the phosphor keeps glowing even if the electron beam doesn't shine on it, and it could be the thick end of a second (!) on some monitors.

As there weren't any action games with detailed full screen animation for those

computers, and since high persistence eliminates flicker, those screens were a good solution at the time. Modern CRTs have very low persistence, and thus pretty much zero ghosting, as you say.

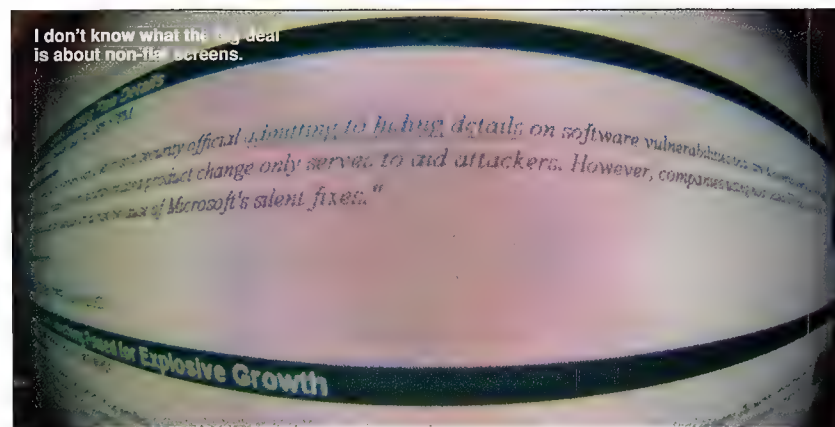
Modern LCDs update the screen in a more straightforward way. The image gets dumped to the screen all in one go each time it refreshes, and all of the subpixels (and the pixels that're made up of subpixel triplets) change at once (if they need to).

The difference is that all of the LCD subpixels only start changing at once. The monitor hardware does its best to get them all to change as fast as possible. Some, if not most, modern LCDs deliberately overdrive subpixel changes to get them to shift intensity faster, then chop off the drive voltage when the subpixel's got to pretty much the right place.

Think of the subpixel intensity as being like a lead ball being pulled around by a rubber band; the other end of the rubber band represents the drive voltage. Small changes take longer, because the band isn't stretched as hard, but you can stretch the band far to get the ball moving, and then move the band-end back to where you want it. Fortunately, the smaller the change, the less visible it is; that's why your ghosting problems exist for medium-sized intensity changes, not big ones or tiny ones.

So, let's imagine a CRT and an LCD with the same 16ms (say) screen refresh rate, but let's say the LCD also has a 15ms (to avoid confusion) grey-to-grey response time. We have one screen that changes all of its pixels pretty much instantly when the electron beam sweeps over them, every 16ms, and another screen that starts changing all of its pixels every 16ms. But the LCD screen may not finish changing a given pixel until 15ms later, barely in time for another screen refresh.

Hence, ghosting, and a reason for rabid gamers to upgrade to LCDs with .04ms response times.



Survival of the winning

To enter, go to www.atomicmpc.com.au/competitions. You can only enter once per competition or you'll be disqualified. You must provide a postal address and phone number for prize delivery when you enter. If you supply a PO Box you will be disqualified.

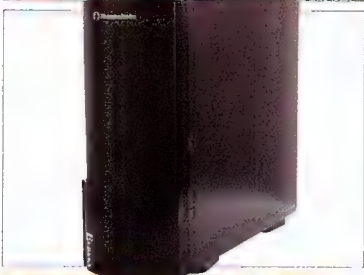


1x Limited edition custom Atomic & Prey spray-painted performance gaming PC + 10x Prey mousepads*

Waiting for that awesome-looking first person shooter called Prey? With a great story involving native Americans and hostile aliens, frenetic multiplayer and upside-down running, how could you not be seized in anticipation? To celebrate the soon-to-be-released game, Take 2 (www.take2interactive.com.au) has a beefy gaming PC to give away that we'll be spraying with a combination of Atomic and Prey-related imagery! Enter now and don't miss out. As a bonus, ten lucky runners-up will receive a Prey mousepad!

Visit www.atomicmpc.com.au/preycomp.asp for all the details on how to enter!

*Terms and conditions apply. Competition closing date can be found online at www.atomicmpc.com.au/preycomp.asp



1x Thermaltake Eureka case

Computers are kept in cases, you can't argue with that. Big cases, small cases – cases as big as your head. If they weren't, they'd be all over the place, hard drives hanging from walls, CPUs stuck into wheels of cheese and keyboards strapped to torsos. Of course, you can avoid all this by entering this competition for Thermaltake's wonderful Eureka case. To keep all your bits snug and warm, just answer the following question.

Q In which year did the Eureka Stockade occur in Victoria, Australia?



5x copies of Heroes of Might and Magic V + collector's coin with pouch

Holy flying horses! What a game! We've gone absolutely stark crazy over Heroes of Might and Magic V (www.mightandmagic.com) for the simply fact that it not only has heroes, but might and magic as well. That's heaps to cram into the one game, yet they found a way, just like Frodo did to Mordor. Enter this competition and not only do you stand a chance of winning one of 5 copies of the game, but a limited collector's edition coin in a lovely pouch! Thanks muchly to Owen at Ubisoft (www.ubisoft.com.au) for this awesome prize!

Q What is the name of the developer of the original Heroes of Might and Magic?

5x TRENDnet 802.11g wireless USB 2.0 adapter with hotspot detector

Look at that! A combination 802.11g USB wireless adaptor and hotspot finder with a nifty soccer chassis! Technology doesn't get much better than this... well, until some crazy scientist designs a functional personal teleporter. In the meantime, answer the question below and you'll have a chance to win one of 5 of these fantastic devices, courtesy of the lovely TRENDnet (www.trendnet.com.au)!

Q Which Australian player captained the Socceroos in the side's last World Cup campaign in 1974?

To enter visit www.atomicmpc.com.au/competitions The closing date for entries is 12 July 2006. Winners will be announced in Atomic 68.

Atomic 64 winners: 5x Galactic Civilization 2 Q: According to Star Trek science, what constant does a warp drive's subspace field reduce in order to get around the limitations set by Einstein's theory of general relativity? A: Gravitational. T. Campeanu, Terranora NSW A. Patullo, Elliminyt VIC C. Veness, Macleod VIC D. Wu, North Sydney NSW J. Burrows, North Caulfield VIC. 1x Saphre X1800XT Platinum Edition Q: What is the square root of 1764? A: 42 G. Gonobe, South Guilford WA 3x Xite! Hi-Fi links. Q: What term is used to describe the ability for bats to negotiate their surroundings using sound? A: Echolocation or sonar. B. Cops, Ringwood East VIC. L. Martino, Panania NSW. L. Walters, Brendale QLD

Terms and Conditions of Entry. 1. The promoter is Haymarket Media of 52 Victoria Street, McMahon's Point, NSW 2060. Promotion period is from 9.00am on 14.06.06 until 12.00pm on 12.07.06. 2. Entry is open to residents of Australia and New Zealand. Management and employees of Haymarket Media and their immediate families, and any advertising, marketing or promotional firms associated with this promotion are not eligible to enter. 3. Enter by posting or emailing forms to Haymarket Media. 4. The draw will be held at the offices of Haymarket Media at 5.00pm on 14.06.06. Winners will be notified by mail and published in Atomic 68. The prizes are not transferable or exchangeable. 5. The judges' decision is final and no correspondence will be entered into. 6. The promoter reserves the right to publish the winner's name and suburb for promotional purposes. 7. All entries will become the property of Haymarket Media.

atomic
... Xbox 360, PS3 or Wii?

editorial editorial@atomicmpc.com.au
editor ashton mills xbox 360
deputy editor logan booker ps3
technical writer orag simms xbox 360
sub editor kristyn maslog-levis wii
online producer ben mansill ps3
editorial director debra taylor ps3

design design@atomicmpc.com.au
art director bill chan xbox 360
product photography jason busch

contributors

ben mansill, tim dean, daniel rutter,
kate inabinet, leigh dyer, ron prouse
christopher taylor, bennett ring,
nathan davis, moz, hulks, jack carroll

production

production manager kris harrison
production co-ordinator matt dykzeul
printed by webstar

distributed by

network distribution company
(02) 9282 8777
gordon & gotch new zealand
(09) 625 3005

advertising + marketing

t+61 2 8399 3611 f+61 2 8399 3622
advertising manager
louise vicente
vicente@atomicmpc.com.au

marketing & promotions neil parkin
nparkin@haymarketmedia.com.au
account executive kate phelan
kphelan@haymarketmedia.com.au

haymarket media

t+61 2 8399 3611 f+61 2 8399 3622
52 victoria street, mcmahons point
nsw 2060 australia
managing director jeremy vaughan
associate publisher jon westnedge
associate publisher john massey

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o/p

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WIN! Illustrator CS 2! Worth \$899!

I call it 'Knight of Ormeta'. The character was inspired by WoW cinematic that I saw over a year ago, just before the game came out. It took me a while to complete but it is finally finished. The character was created in 3ds max and the background was hand painted in Photoshop.

- Artur

Create the winning Artomic and you could win Photoshop or Illustrator from **Adobe** (www.adobe.com/ap/explore)!

Email a preview (no larger than 5MB) of your masterpiece to:

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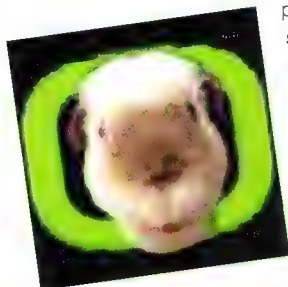


The Salty Peanut
Christopher Taylor prefers the unsalted kind.

The Salty Peanut has been a member of the *Atomic* forums for many years and is one of the kindest, funniest and most generous people you could ever hope to meet. We managed to catch up with him and have a little chat about audio, moderating and that thousand dollar T-shirt.

atomic What's with the name?

The Salty Peanut It is a variation of an old nick I used to use when I played Age of Empires on the MSN Gaming Zone. I was SaLtY_pEaNuTs there and when I signed up for *Atomic* I was pretty well accustomed to responding to 'salty' or 'peanut,' so I just modified it a little. Don't ask where the inspiration came from initially because I have no idea. :P It is funny, though, because now I can't imagine it being any other way.



atomic On the forums you're known as a guy who's always willing to help people out. Perhaps the most famous example of your Salty Love™ is the time you spent \$1000 on a t-shirt. What was the story there?

The Salty Peanut Heh... well, that's the exaggerated story that gets pimped around the place. The T-shirt in question is a signed, one of only a few hundred unique *Atomic* badger shirts. These shirts were printed up by nodnerb. It was

autographed by all the moderators, including the elusive Virtuoso and Ben Mansill. It was auctioned off to raise money for young Bailey at a charity LAN that members of the community organised. The truth is, it was a real community effort. I paid for most of the shirt, yes, but a large sum of the money was also donated to me by many of the onlookers at the auction in order to keep me going. It was a real team effort. :)

atomic Now, we have to ask – why do so many people confuse your perfectly innocent forum avatar with something... rude?

The Salty Peanut This baffles me quite considerably. I always thought it was quite obviously a guinea pig, but the alarming number of people who just assumed it was a sheep's arse makes me think otherwise.

atomic Earlier this year, Ben asked you to be a forum

moderator. How's that been working out?

The Salty Peanut Well, now that Evil Admin has reactivated his account after I nuked him by accident, it's been going swell! Ha ha. It was interesting to sit back and view the community from a different perspective. You become more aware of certain things, people begin to pay more attention to you (which can be both positive and negative) and, best of all, I can BAN people!

atomic What effect has being a member of the *Atomic* community had on your life?

The Salty Peanut Heh, it has been pretty profound to tell you the truth. I signed up in 2003, and now, three years later, I'm a totally new person. 10,000 posts, A Heroship, a Modship, and many laughs, tears, frowns, smiles and pokey out tongues will do that to you :P Through the forums I've met many amazing people, done lots of cool things, and I can see the *Atomic* way of life being part of me for many years to come.

atomic What do you do for a living?

The Salty Peanut I work in Radio Land for the ABC and FBI, both in audio-related capacities. Be it panel operating for Radio National or building studios for FBI, I get to fulfill my creative and techy needs. It makes me all happy and stuff.

atomic What does your job as an audio engineer involve?

The Salty Peanut My work at the ABC primarily involves the off-air technical production of radio programs. This includes recording interviews and working with producers and announcers to mix and output a completed program. I'll do the odd bit of live to air work as well, which is exciting because there is no safety net – if I screw up, the whole nation hears it! Ha ha ha.

atomic What's the most interesting thing you've learnt as an audio engineer?

The Salty Peanut That the mind and the ears are easily tricked. Little tricks can change the way a sound or sounds are interpreted by the brain. Once you learn these psycho-acoustic tricks, you can use them to your advantage, making the impossible possible and taking the listener out of their reality and totally absorbing them. Well, that's the idea anyway. :)

atomic What is it about audio that interests you so much?

The Salty Peanut Well, music is my life, so I guess that's where my interest originally stems from. Initially, I just wanted to make good sound recordings. Most commercial albums just sound so boring... couple that with the current trend being to mix for iPods and mobile phones, the average album sounds pretty awful. Once I learnt more about the human ear, psycho-acoustics and the like, I realised that not only was the audio industry a technical industry, but a creative one as well. The engineer has the power to paint pictures with sound. I like it because when you create something purely out of sounds, the listener must pay complete attention to the piece in order to understand it fully. I like that idea. It is not like cinema where the audience is flooded with stimuli. It is more akin to writing in that respect.

WEBSIGHT

A HANDS-ON LOOK
INTO THE AWESOME
ATOMIC COMMUNITY

PC GAMING	6	81	14/10/05 1:07:25 PM	by mon64
CONSOLE GAMING	6	70	14/10/05 12:59:58 PM	by up741
TECH REVIEWS	23	Wallish	14/10/05 12:42:28 PM	by Wallish

Hulkster So, what have you got for us this month, buddy?

Moz I thought I would start with a nice one – young Tristan, son of forum Hero donnaGEM, is participating in his sixth MS Readathon this year. It's a big one too. Atomicans have once again shown their generosity by getting behind the little bloke and donating their hard earned dollars. All for a good cause!

www.atomicmpc.com.au/forums.asp?s=1&c=1&t=84924

Hulkster Throw in a couple of extra bucks and he might teach you how to read. What's next?

Moz The ranks. Oh god, the ranks! The powers that be decided we needed a change in the forum ranks, so we all became *Sponge Bob* groupies for a week. Some of the less sophisticated among us had never seen the legendary *Sponge Bob* in action, so the whole concept was lost on them.

www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85404

Hulkster A bit like you and the concept of housework. I swear you only leave the place like this so I will cave in and hire us a maid. I keep telling you the only one we can get is an 80-year-old ex-real estate agent named Roger. Moving right along...

Moz The big fight was a cause for much debate. Mundine versus Green. Man versus Machine. A truly epic battle! The fight may have been decided but the debates raged on for days afterward!

www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85740

Hulkster I heard you had a short stint as a professional boxer. Weren't you sponsored by Panadol?

Moz Yeah. They used to put the labels on the soles of my shoes. Ooh! Here's a good one! Kunzie spotted a green light flashing through the clouds over Brisvegas. The theories on what form the resulting alien invasion would take would have made any sci-fi buff proud!

www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85740

[asp?s=1&c=1&t=85649&p=0](http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85649&p=0)

And another – Cynic needed help unblocking his nose so he did the only logical thing and asked other Atomicans for advice. I'm not sure if any of it helped.

www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85612

Hulkster I hear he'll be released from hospital later this week after taking your 'fork' advice.

Moz Don't thank me, Cynic. It was the least I could do!

Hulkster I think you should stick to making cardboard box robots.

Moz Funny you should mention that. Voightkampff conducted the Giant Death Robot challenge! He was overwhelmed with entries, some of which rivalled my very own tomato box creations!

www.atomicmpc.com.au/forums.asp?s=2&c=11&t=3290

Moz And here is someone putting those sorts of creative skills to good use – gun_sl1nger decided to build a case from scratch. He's given us a full run-down on his ideas and efforts including a complete photo record! Although it doesn't resemble a leviathan of cybernetic destruction, it still looks like it will be awesome.

www.atomicmpc.com.au/forums.asp?s=2&c=18&t=4042

And that's all I've got for you this month. Now, about Roger...

Hulkster Do you think if I asked Ashton, he'd move me to another section of the magazine?



POST OF THE MONTH

Fred is an *artist*.

Fred recently offered to draw a portrait of any Atomican that wanted one. And he did, and they were *good*. Fred has somehow captured the essence of dozens of Atomicans, remarkable

considering he only just started posting on the forums. it seems.

The whole thing of it all is *art*. The entire thread is *art*. It is POTM 66
www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85439

[asp?s=1&c=1&t=85439](http://www.atomicmpc.com.au/forums.asp?s=1&c=1&t=85439)

Congratulations and thanks, Fred. We hope you enjoy your prize, a Logitech G5 mouse, which we hope is a brush in your artist's hands.



Every **Post of the Month** wins a fabulous **Logitech G5** mouse from the brilliant people at **Logitech**... Huzzah!



FALLOUT

FUNNIES AND
HUMOUR FROM THE
FALLOUT ZONE

Welcome to the future.



The end is Wi-Fi: Part 1

Logan Booker explores a future not so far away...

Wil took off his aluminium hat. 'Do I really have to wear this?'

Dee sighed. Wil had the sort of hair that rustled easily, and even as he brought the hat down from his head, tendrils of the unkempt brown fibre spiralled from his scalp.

He was new. He didn't understand the dangers. At least not yet.

'Yes, you do.' She took the hat from him and tried, unsuccessfully, to contain the countless twisted follicles. Although the end result looked like someone had shoved a feather duster up a stove pipe, she eventually got it back on.

'You have a head like a bale of hay.'

'What the heck is that supposed to mean?'

'It means you need a haircut. Or a lawnmower. I have no idea how you see out of that mop.'

Wil looked hurt. Not that Wil ever looked genuinely hurt. He just scrunched up his face like a piece of toilet paper preparing to meet its sphincter maker. The guy was bullet proof.

'Okay, you look like a scarecrow then.'

'Since when do scarecrows wear stupid stuff like this?' Wil pointed at the cap. 'I feel like a garlic bread.'

Dee had to admit that the hats were roughly made and incredibly stupid-looking. But now – right on time for this period of the year – they needed something to deaden the rising 'brain noise' from the multi-terahertz beams. Wil had demanded that, if he had to wear one, it had to look like a pirate hat. Dee had obliged, going so far as to draw a skull and crossbones in indelible marker on the front.

It had gone down well.

'Arr!' Wil closed his left eye and glared at Dee with his right. 'Would a pirate be wearing a foily cap on his yar boat? Yar?'

'It's not like pirates had to protect themselves from invisible beams of intense wireless radiation,' replied Dee.

'Yar, that be true, ye land lubber.'

'I'll lubber you in a minute if you don't quit with the yarring.'

Toilet paper face. 'Ah, come on. I'm just trying to lighten the mood.'

Dee sighed. 'I know.'

Outside it was as rough and deserted as usual, the sand blowing seemingly in every direction. Dee could feel the bitterness of the parched land in her mouth, like someone had used sand instead of sugar in her coffee.

'Damn I could go for a Yogo right now.' Wil had a yoghurt fetish apparently. Not that he'd be able to satiate his need. Ever.

After the entire world had gone wireless, there wasn't much of anything left. Hard to make yoghurt when anyone can control your factories, machinery and computers remotely from thousands of kilometres away. Not that it had been a problem – most people were killed when every single antenna in the world had instantaneously turned into a death ray.

'Stupid wireless.' Wil flicked his hat.

It took longer to reach the outpost than usual, mostly because Wil had to ask about everything along the way.

Dee wiped her brow and kneeled at the jammer. A tiny red LED blinked every couple of seconds, letting her know the device was active, preventing errant wireless signals from passing into the safe zone. Without the jammers, Wil and herself would be lucky to last 30 seconds in open air.

'I heard Mikel over in bunker 12 had his brain fried.' Wil stared into the sky, looking at nothing in particular. He whistled 'They say it was a 6THz beam from sector 88.'

Dee shook her head, her blonde hair dancing in front of her face. She knew about Mikel. Sector 88 had once been home to most of the commercial radio stations and their giant, Eiffel Tower-like transmitters. Now they were just huge mind-frying hunks of metal.

Wil whistled again. '6THz... I didn't think they got that powerful.'

'They don't. They think it was amplified by some transmission coils in sector 87.' Dee stopped checking the jammer and turned to Wil. 'It was just bad luck. He was near a jammer

“Most
were killed
when every
single antenna
in the world
turned into a
death ray...”

– the fuses are good up to about 3THz.'

'Yeah, it's lucky the jammer didn't go. Would've killed the entire bunker they say.' Wil coughed uncomfortably.

'Maybe.' But she knew he was right. 'Look, if you need to...'

'Hey is... is it supposed to do that?' He was pointing to the jammer now. He looked more upset than the last cream pie at a clown convention. She tapped his leg reassuringly from her crouched position. Maybe he wasn't so bullet proof after all. 'What? Yes, it's supposed to blink. Look, we're nowhere near sector 88. And besides, the jammer's working fine.'

Wil swallowed hard. 'It is? Then why *isn't* it blinking?' Dee turned back.

The LED had stopped. The jammer was dead.

Will Dee live? Can Wil satisfy his Yogo fetish? Tune in next month to find out!

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